

Order Apodes

Body elongate, cylindrical or compressed. Gill openings rather small. No pseudobranchiae. Premaxillaries not developed as distinct elements. Maxillaries border mouth. Opercles small, membrane covering large branchial chamber chiefly supported by long branchiostegals. Single pair of dentigerous upper pharyngeals opposed to separate lower pharyngeals. Gonoducts reduced to genital pores. Air vessel joined to oesophagus by tube. Scales rudimentary or absent. Lateral line present or absent. Dorsal and anal fins continuous to or with reduced caudal, when present. Pectorals small or absent. Ventrals absent.

A large group of soft rayed fishes, considered by Regan an offshoot of the herring-like fishes. Apparently of low organization, especially the forms with more simple structure, they are hardly primitive but more likely the modification of a long continued progression, according to their mouth and fins.

Analysis of species

- a<sup>1</sup>. Carencheli. Premaxillary and maxillary distinctly developed; gill openings 2 well separated inferior slits on pharynx. ----- Derichthyidae.
- a<sup>2</sup>. Premaxillaries and maxillaries not distinctly developed.
- b<sup>1</sup>. Skin covered with rudimentary embedded scales, usually of linear form, arranged in small groups obliquely at right angles to those of neighboring groups; tongue with free edges; hind nostrils before eyes; pectorals and vertical fins well formed, latter confluent around tail.
- c<sup>1</sup>. Gill openings well separated; branchiostegals long, bent upward behind.
- d<sup>1</sup>. Gill openings lateral; snout conic; jaws not very robust; mouth cleft longitudinal; lips thick; teeth in villiform bands in jaws and on vomer. ----- Muraenidae.
- d2. Gill opening horizontal, inferior.
- e<sup>1</sup>. Snout very blunt; jaws very strong; gape transverse; lips obsolete; teeth blunt, uniserial in jaws. ----- Simenchelyidae.
- e<sup>2</sup>. Snout conic, slender; jaws moderately strong; gape lateral; lips obsolete; teeth acute, in bands in jaws and on vomer.

Ilyophidae.

- c2. Gill openings inferior, very close together, apparently confluent; branchiostegal rays abbreviated behind; head conic; tongue small; hind nostril before eye.

Synaphobranchidae.

- b<sup>2</sup>. Scales entirely absent.

- f<sup>1</sup>. Vent median or premedian.

- g<sup>1</sup>. Tip of tail with more or less distinct fin, dorsal and anal confluent around it; tail sometimes ends in long filament; color brown, blackish or silvery, fins of ten black bordered.

- h<sup>1</sup>. Hind nostril entirely without tube, placed entirely above upper lip.

- i<sup>1</sup>. Vent far behind gill openings.

- j<sup>1</sup>. Snout conic, moderate to elongate, often with strong or well developed dentition.

- k<sup>1</sup>. Pectoral fins well developed.

Body not elevated so greatest depth premedially.

- m<sup>1</sup>. Tongue wide, largely free anteriorly and on sides; no canines; branchial openings in pharynx wide slits.

Leptocephalidae.



m<sup>2</sup>. Tongue narrow, adnate to mouth floor or only tip slightly free; canines anteriorly in jaws and on vomer; branchial openings in pharynx wide slits. Muroenesocidae.

m<sup>3</sup>. Tongue not free; teeth few, acute, uniserial; branchial openings in pharynx narrow slits.

Neenchelyidae.

l<sup>2</sup>. Body elevated, deepest premedially; snout long, attenuated.

Sauromuraenesocidae.

k<sup>2</sup>. No pectorals.

n<sup>1</sup>. Snout very short and blunt, mouth terminally superior; tail without terminal filament.

o<sup>1</sup>. Front nostril minute, concealed; hind nostril narrow slit near eye; teeth small in bands.

Heterocongridae.



o<sup>2</sup>. Nostrils lateral, front  
one in short tube;  
teeth uniserial or bi-  
serial. Xenocoagridae.

n<sup>2</sup>. Snout and jaws much prod-  
uced, upper longer.

p<sup>1</sup>. Snout and jaws straight;  
vent distant from  
gill openings.

Nettastomidae.

j<sup>2</sup>. Snout very short. obtuse; teeth  
small, in broad short villiform  
bands; pectorals long.

Macrocephenchelyidae.

i<sup>2</sup>. Vent close behind gill opening; pect-  
orals present or absent.

Dysommidae.

h<sup>2</sup>. Hind nostril close to edge of upper  
lip; tongue more or less fully ad-  
nate to mouth floor; teeth subequal.

Echelidae.

g<sup>2</sup>. Tail tip without rays, projects as firm  
point beyond dorsal and anal; hind nos-  
tril on edge of upper lip; front nos-  
tril near snout tip, usually in small  
tube; tongue usually adnate to mouth  
floor.

Ophichthyidae.

f<sup>2</sup>. Vent ~~far~~ postmedian; vertical fins low  
feeble folds, rays feeble and distinct  
only at end of tail; pectorals short,  
vestigial or absent; teeth uniserial.

Rabouridae.

a<sup>2</sup>. Colocephali. Gill openings small, rounded, lead-  
ing to restricted interbranchial slits; tongue  
absent; opercles feebly developed; pectorals  
usually absent.

Echidnidae.

## Family DERICHTHYIDAE

Body elongated, slender sometimes with neck like constriction between head and pectoral fins. Head oblong, oval. Snout short. Eye large. Mouth cleft little inclined, extends behind eyes. Teeth conic, in bands in jaws and on vomer. Lips moderate. Tongue moderate. Gill openings inferior, short horizontal slits before pectoral. Lateral line axial. Dorsal anal and caudal confluent. Pectorals short or long, below middle in body depth.

Bathypelagic. Small plain colored eels with small restricted gill openings and placed inferiorly.

Analysis of genera

- a<sup>1</sup>. Pectoral long; dorsal origin midway between middle of eye and vent; pharynx with neck like constriction. Derichthys.
- a<sup>2</sup>. Pectoral short, rounded; dorsal origin but little before anal origin; pharynx not contracted. Bathychelys.



Genus Derichthys Gill

Derichthys GILL, American Naturalist, vol. 18, 1887, p.

433. Type Derichthys serpentinus GILL, monotypic.

Body stout, somewhat compressed, especially tail. Pharynx with neck like contraction. Head small, depressed above. Snout truncate as seen from above. Eyes far advanced. Mouth cleft large, lower jaw narrower and included. Teeth small. Nostrils lateral, elongate, before eyes, neither tubular. Branchiostegals 6, slender. Branchial arches slender. Lateral line inconspicuous. Dorsal origin well advanced from vent, rays flexible, feeble, fin rather high. Caudal small. Vent nearly premedian.

Derichthys serpentinus Gill

Derichthys serpentinus GILL, American Naturalist, vol.

18, 1887, p. 433. N. 39°44' 30" W. 71°4', 1022

fathoms. -- GOODE and BEAN, Oceanic Ichth., 1895, p.

161, pl. 45, fig. 169, a-b (type). -- JORDAN and

EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896,

p. 343. (compiled).

Derichtys iselini BORODIN, Proc. New England Zool. Club,

vol. 10, Jan. 22, 1929, p. 110, N. 50°41' W. 27°17',

1000 fathoms.

Benthenchelys new genus

Type Benthenchelys cartieri new species.

Body moderately long, compressed, little less than twice in tail. Head small, compressed. Snout, short, obtuse. Eye large, advanced before first third in head. Mouth cleft short, not extending beyond eye, lower jaw included in upper. Teeth small, uniserial, rather few and small patch at front of upper jaw. Nostrils lateral on snout, front one near first third in snout length, hind one nearly 3 times as large and close before eye. Gill openings little inclined from vertical, close before and partly below pectoral base. Lateral line axial. Vertical fins confluent, rather high, dorsal extending but little on trunk. Pectoral placed lower half of body depth.

Diagnosis. Differs from Derichthys in its entirely different physiognomy, without a contracted neck, the gill openings lateral and close before pectoral base, dorsal extended very little on trunk and pectoral short and rounded.

(Bevθos, of the depths; Eyxελus, eel.)

Benthenchelys cartieri new species

Depth  $25 \frac{3}{5}$  to 26,  $8 \frac{2}{5}$  to  $8 \frac{1}{2}$  to vent; head  $3 \frac{1}{5}$  to  $3 \frac{1}{3}$ ,  $9 \frac{1}{4}$  to 10 in total, width 3 to  $3 \frac{1}{5}$  in its length; head and trunk 2 to  $2 \frac{1}{10}$  in tail. Snout 6 to  $6 \frac{1}{5}$  in head; eye  $4 \frac{1}{2}$  to  $5 \frac{3}{4}$ , little greater than snout or interorbital; mouth cleft reaches opposite hind eye edge, length 3 to  $3 \frac{1}{5}$  in head; interorbital 7 to  $7 \frac{1}{2}$ , level. Gill opening  $7 \frac{1}{2}$  to 11.

Dorsal origin about pectoral length before anal origin; caudal about  $\frac{2}{3}$  length of eye diameter; pectoral  $3 \frac{3}{5}$  to  $3 \frac{7}{8}$  in head.

Brown, jaw with slight dusky tinge, pharynx pale or brownish white, abdomen dark to dusky or neutral gray. Iris dark gray. Fins all very light brown to brownish white.

Diagnosis. Contained in genus.

Type No. U. S. N. M.

D. 5185. Lusaran Light, N.  $23^{\circ}$ E., 25.50 miles (N.  $10^{\circ}5'$  E.  $122^{\circ}18'30''$ ), between Panay and Negros, in 638 fathoms. March 30, 1909. Length 95 to 115 mm., largest of 5 examples and type.

D. 5129. Dulunguin Point, N.  $44^{\circ}$ E., 3.80 miles (N.  $7^{\circ}41'30''$  E.  $122^{\circ}1'45''$ ), Sulu Sea off western Mindanao. In 100 fathoms. February 5, 1908. Length 119 mm.

(For Oscar Cartier, who studied Philippine fishes in 1873.)



## Family MURAENIDAE

Body subcylindrical, compressed behind. Head conic, moderate. Eyes covered with skin, without free lids. Mouth terminal, lateral cleft reaches below eye. Teeth small, cardiform or villiform, in bands. Tongue distinct, free in front and laterally. Opercular bones well developed. Gill openings well separated by wide interspace. Body covered with very small scales. Lateral line distinct, axial. Dorsal and anal confluent with redeced caudal. Pectoral present, rays simple. Vent premedian, usually remote from head.

One living genus, widely distributed in tropical and temperate waters. Contrary to most fish eels descend to the sea for the purpose of spawning, only the young females ascending into fresh water again. The ova are microscopic. The young pass through a metamorphosis like that of the congers.

Genus Muraena Linnaeus

Muraena LINNAEUS, Syst. Nat., ed. 10, vol. 1, 1758, p. 244.

Type Muraena anguilla LINNAEUS, designated by BLEEKER,  
Nederland. Tijdschr. Dierk., vol. 2, 1865, p. 113.

Murena RAFINESQUE, Car. Animal. Sicil., 1810, p. 67. Type  
Muraena anguilla LINNAEUS, Error for Muraena. Anguilla  
SHAW, General Zool., vol. 4, 1803, p. 15. Type Muraena  
anguilla LINNAEUS, tautotypic.

Tribranchus (PETERS) MÜLLER, Abhandl. Akad. Wiss. Berlin,  
1844, p. 193. Type Tribranchus anguillaris (PETERS)  
MÜLLER, monotypic.

Terpolepis MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 5,  
1845, p. 225 (172, 208). Type Anguilla brevirostris  
MC CLELLAND, monotypic.

Head long, rather pointed. Eye rather small, advanced. Teeth in bands in jaws, subequal, large patch on vomer. Lower jaw protrudes. Nostrils superior, well separated, front one with slight tube near end of snout. Gill opening rather small, partly below pectoral base. Body covered with very small, embedded linear scales, oblique, some at right angles to others. Dorsal inserted some distance from head.

Omnivorous voracious fishes, feeding mostly in the mud or along the bottom. Female larger than male, paler, with smaller eyes and higher fins. Female supposed to die after once spawning in the sea. Eels travel overland in wet grass at night, often passing obstructions in this way.



Analysis of species

- a<sup>1</sup>. Space between dorsal and anal origins more than half of head.
- b<sup>1</sup>. Maxillary and mandibulary band of teeth longitudinally divided by an edentulous groove.
  - c<sup>1</sup>. Dorsal origin nearer vent than gill opening. bengalensis.
  - c<sup>2</sup>. Dorsal origin nearer gill opening than vent. mauritiana.
- b<sup>2</sup>. Maxillary and mandibulary band of teeth without an edentulous groove.
  - d<sup>1</sup>. Mouth cleft reaches hind border of eye (young), full grown about eye diameter behind eye.
    - e<sup>1</sup>. Western Indian Ocean. anguillaris.
    - e<sup>2</sup>. East Indies. celebesensis.
    - e<sup>3</sup>. China, Formosa, Japan. japonica.
  - d<sup>2</sup>. Mouth cleft reaches even (adult) with hind border of eye. reinhardti.
- a<sup>2</sup>. Dorsal origin close before, above or behind vent; no edentulous groove within bands of jaw teeth.
  - f<sup>1</sup>. Mouth cleft reaches beyond eye, eye 12 2/5. dussumieri.
  - f<sup>2</sup>. Mouth cleft reaches hind border of pupil or not so far; eye 6 to 7. spengeli.
  - f<sup>3</sup>. Mouth cleft reaches hind border of eye or farther; eye 8 to 12. australis.

Muraena bengalensis Gray

Muraena bengalensis GRAY, Illustat. Indian Zool., Hardwicke, vol. 1, 1830-33 (1832), pl. 95, fig. 5. No locality (Bengal). -- FOWLER, Hong Kong Naturalist, vol. 3, No. 1, March 1932, p. 49 (compiled).

Anguilla bengalensis GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 27 (Hooghly River; madras; Nilgherrias; India; Ann. Mag. Nat. Hist., ser. 4, vol. 12, 1873, p. 250, Shanghai). -- DAY, Journ. Linn. Soc. London, Zool., vol. 12, 1876, p. 576 (Deccan). -- BEAVAN, Fresh Water Fishes India, 1877, p. 159 (India). -- DAY, Fishes of India, pt. 4, 1878, p. 659, pl. 168, fig. 1; Fauna Brit. India, Fishes, vol. 1, 1889, p. 86, fig. 35 (fore part of body and dentition). -- REUVENS, Notes Leyden Mus., vol. 16, 1895, p. 154, (Groot Bastard; Macassar; Java; East Indies; Lake Nelko, Timor; Lake near Baun), p. 156 (Lake Danau-Naluk, Rotti). -- ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 7. -- GÜNTHER, Proc. Zool. Soc. London, 1904, p. 91 ( ). -- DUNCKER, Milleil. Naturk. Mus. Hamburg, vol. 29, 1911, p. 268 (Vakvella, Ceylon). -- BOULENGER, Cat. Fresh Water Fishes Africa, vol. 3, 1915, p. 7 (part). -- TIRANT, Service Oceanogr. Peches Indo Chine, 6<sup>e</sup> Note, 1929, p. 179 (Thudaumot).

Muraena maculata (not LACÉPÈDE) BUCHANAN HAMILTON, Fishes of Ganges, 1822, p. 23. -- DAY, Fishes of Malabar, 1865, p. 244.

Anguilla elphistonei SYKES, Proc. Zool. Soc. London, vol.

6, 1838, p. 165, Deccan; Trans. Zool. Soc. London, vol.

2, 1841, p. 377. pl. 67, fig. 3. -- MC CLELLAND, Calcutta

Journ. Nat. Hist., vol. 5, 1844, p. 208 (Western India).

-- BLEEKER, Verh. Batav. Genootsch. (Nal. Ich. Bengal),

vol. 25, 1853, p. 76 (reference). -- WEBER, Zool. Jahrb.

Suppl. Festschr., vol. 15, pt. 1, 1912, p. 578 (Farther

India, Burma, Andamans, Sumatra); Siboga Exped., vol. 57,

Fische, 1913, p. 32 (reference). -- WEBER and BEAUFORT,

Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 244

(Serdang, Sumatra; Java; Manado, Celebes). --

DERANIYOGALA, Ceylon Administrat. Rep., 1925, p. F15. --

Chen, Bull. Biol. Dep. Sun Yat-Sen Univ., vol. 1, 1929,

p. 5, fig. 1 (dentition) (Macao, Amoy, Foochow, Kashein,

Ningpo).

Anguilla brevirostris MC CLELLAND, Calcutta Journ. Nat. Hist.,

vol. 5, 1844, pp. 177, 208, pl. 5, fig. 1, Bengal and

Arracan. -- BLEEKER, Verh. Batav. Genootsch. (Nal. Ich.

Bengal), vol. 25, 1853, p. 76 (reference). -- MASON,

Burmah Nat. Resources, 1860, p. 702 (reference).

Anguilla arracana MC CLELLAND, Calcutta Journ. Nat. Hist., vol.

5, 1844, pp. 178, 209, pl. 6, fig. 2. Sandoway on the

Malay coast. -- MASON, Burmah Nat. Resources, 1860, p.

702 (reference).



Anguilla nebulosa MC CLELLAND, Calcutta Journ. Nat. Hist.,  
vol. 5, 1844, pp. 179, 208, pl. 5, fig. 2. Bengal and  
Sandoway. -- BLEEKER, Verh. Batav. Genootsch. (Nat. Ich.  
Bengal), vol. 25, 1853, p. (76) 153, (Calcutta). --  
MASON, Burmah Nat. Resources, 1860, p. 702 (reference).

Anguilla variegata MC CLELLAND, Calcutta Journ. Nat. Hist.,  
vol. 5, 1844, pp. 179, 208, pl. 9, fig. 7. Ganges at  
Behar.

Anguilla marmorata (not QUOY and GARNARD) KAUP, Archiv  
Naturg., 1856, pt. 1, p. 55 (compiled); Cat. Apodal Fish  
Brit. Mus., 1856, p. 43 (part).

Muraena mauritiana (Bennett)

Anguilla mauritiana BENNETT, Proc. Comm. Zool. Soc. London, 1831, p. 128. Mauritius. -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 25 (Amboina, Almorah, Ceylon, Philippines, Formosa, types of Anguilla labrosa and A. johannae). -- MARTENS, Preuss. Exp. Ost-Asien, vol. 1, 1876, p. 405 (Amboina; Kupang, Timor). -- GÜNTHER, Philos. Trans. Roy. Soc. London, vol. 168, 1879, p. 471 (Rodriquez); Rep. Voy. Challenger, vol. 1, pt. 4, 1880, p. 33 (Mary River, Queensland), p. 36 (fresh water Levuka; Ovalau), p. 58 (Lake Waihirra, Tahiti). -- MEYER, Anal. Soc. Espan. Hist. Nat. Madrid, vol. 14, 1885, p. 43 (Manado, Togian, Bay de Tomini, Celebes; Laguna de Bay, Luzon). -- WEBER, Zool. Ergebn. Reise. Nederland Ost. Indië, vol. 3, 1894, p. 428 (Tempe, Celebes; Bankalan and Bonca Rivers, Saleyer, Dona River at Endeh, Mbawa, Flores; Manindjau Lake, Sumatra). -- ELÉRA, Cat. Fauna Filip. vol. 1, 1895, p. 586 (Luzon, Laguna de Bay). -- BOULENGER, Proc. Zool. Soc. London, 1897, p. 429 (Nimahassa). -- ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 7. -- PELLEGRIN, Bull. Mus. Nat. Hist. Paris, vol. 4, 1898, p. 228 (Saypan, Mariannes). --

- JORDAN and EVERMANN, Proc. U. S. Nat. Mus., vol. 25, 1902, p. 325 (Kotosho). -- JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 192 (Vaisigana River and Apia, Samoa). -- EVERMANN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 56 (Tarlac). -- SEALE and BEAN, Proc. U. S. Nat. Mus., vol. 33, 1906, p. 239 (Zamboanga). -- STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, Math. - naturw. Klasse, vol. 115, pt. 1, 1906, p. 1420 (waterfall of Papaseea, Upolu). -- JORDAN and RICHARDSON, Bull. Bur. Fisher., vol. 27, 1907 (1908), p. 237 (Calayan, Mindoro); Mem. Carnegie Mus., vol. 4, No. 4, Aug. 28, 1909, p. 171 (copied). -- GÜNTHER, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 390 (Pelew Islands, Samoa, Society Islands, Solomons, Jahuit). -- KENDALL and GOLDSBOROUGH, Mem. Mus. Comp. Zool. vol. 26, 1911, p. 244 (Kusaie, Carolines). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 8 (Padang, Samoa, Philippines). -- WEBER, Zool. Jahrb. Suppl. Festschr., vol. 15, pt. 1, 1912, p. 582, fig. b (Polynésia, Australia, East Indies, Hong Kong, Philippines, Formosa, Almorah, Ceylon, Mauritius, Johanna, Natal, Mossambique, Zanzibar;) Siboga Exped.; vol. 57, Fische, 1913, p. 37 (Celebes; Nusa Laut). -- WEBER and BEAUFORT, Nova Caledonia, Sarasin and Roux, Zool., vol. 2, pt. 1, 1913, p. 21 (Col Porari et Balade; River Ngoi).



-- PIETSCHMANN, Verh. Nat. Jahrb. Nassau, Wiesbaden, pt. 66, 1913, p. 196 (Kaiser Wilhelm's Harbor, New Guinea). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 245, fig. 100 (dentition), fig. 102 (fore part of body) (Lake Tawar, Lake Manindjan, Sumatra; Simular; Nias; Djember, Java; Flores; Timor; Babber; Lake Tempe, Dongala, Lake Porso, Celebes; Saleyer; Buru; Ambon; Ceram; Nusa Laut; Mamapir, Klipong, Tawarin, Humboldt Bay, New Guinea). -- FOWLER, Copeia, No. 58, June 18, 1918, p. 62 (Philippines). -- FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 9 (Zamboanga). -- HERRE, Philippine Journ. Sci., vol. 23, No. 2, Aug. 1923, p. 134 (Luzon, Leyte, Mindanao, Sibuyan, Masbate, Polillo, Jolo). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1923, p. 36 (Madagascar). -- DERANIYAGALA, Ceylon Administ. Rep., 1925, p. F15. -- FOWLER, Bull. Bishop Mus., No. 22, 1925, p. 4 (Guam), p. 31 (Samoa). -- OSHIMA, Annot. Zool. Japan, vol. 11, No. 1, 1926, p. 4 (Kachels, Hainan). -- (J. SCHMIDT) WHITLEY, Journ. Pan Pacific Res. Inst., vol. 3, No. 1, Jan. March 1929, p. 11 (Santa Cruz Islands). -- CHEN, Bull. Biolog. Dep. Sun Yat-Sen Univ., vol. 1, No. 1, 1929, p. 5 (compiled).



Muraena mauritiana BLEEKER, Nederland. Tijds. Dierk., vol. 4, 1873, p. 123. (reference); Rech. Fauna Madagascar, Pollen et Van Dam, pt. 4, 1874, p. 72 (reference); Arch. Neerland. Sci. Nat. Harlem, vol. 13, 1878, pp. 38, 56 ( ). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 259 (Philippines); Mem. Bishop Mus., vol. 10, 1928, p. 36 (Guam, Samoa, Kusaie, Marshalls, Ascension Island, Carolines, Society Islands); vol. 11, No. 5, 1931, p. 315 (references); Hong Kong Naturalist, vol. 3, No. 1, March 1932, p. 48 (East Indies, Philippines, Micronesia, Polynesia).

Mureana anguilla (not LINNAEUS) BUCHANAN HAMILTON, Fishes of Ganges, 1822, p. 22 ( ). -- LICHTENSTEIN, Descript. Animal. Forster, 1844, p. 257 (Tanna). -- JOUAN, Mem. Soc. Sci. Nat. Cherbourg, ser. 2, vol. 5, 1870, p. 106 (Seychelles).

Anguilla avisotis RICHARDSON, Voy. Sulphur, Fish, 1844, p. 104, pl. 51, fig. 1, Canton; Ichth. China Japan, 1846, p. 312 (Canton).

Anguilla clathrata RICHARDSON, Voy. Sulphur, Fish, 1844, p. 104. Canton; Ichth. China Japan, 1846, p. 312 (Canton).

Anguilla sinensis MC CLELLAND, Calcutta Journ. Nat. Hist.,  
vol. 4, 1844, p. 406, pl. 25, fig. 2, Chusan. -- RICHARD-  
SON, Ichth. China Japan, 1846, p. 312 (Chusan). --  
JORDAN and EVERMANN, Proc. U. S. Nat. Mus., vol. 25, 1902,  
p. 325 (Taihoku). -- JORDAN and RICHARDSON, Mem. Carnegie  
Mus., vol. 4, No. 4, Aug. 28, 1909, p. (Takao). -- WU,  
Contrib. Biol. Lab. Sci. Soc. China, vol. 5, No. 4, 1929,  
p. 30, fig. 23 (head) (Amoy). -- HERRE and MYERS, Lignan  
Sci. Journ., vol. 10, No. 2-3, Aug. 1931, p. 248 (Canton).

Muraena sinensis BLEEKER, Nederland. Tijds. Dierk., vol. 2,  
p. 57 (Amoy).

Anguilla macroptera MC CLELLAND, Calcutta Journ. Nat. Hist.,  
vol. 4, 1844, p. 407, pl. 25, fig. 1. Chusan. -- RICHARD-  
SON, Ichth. China Japan, 1846, p. 312 (Chusan).

Anguilla labrosa RICHARDSON, Ichth. Voy. Erebus and Terror,  
1844-48, p. 48, p. 113. South Seas. -- KAUP, Archiv Naturg.,  
1856, pt. 1, p. 56 (reference).

Muraena (Anguilla) macrophthalmos PETERS, Monatsb. Akad. Wiss.  
Berlin. 1852, p. 684, Zambesi.

Anguilla macrophthalma MARTENS, Reise Ost. Afrika, van der  
Decken, vol. 3, pt. 1, 1869, p. 144 (Zambesi at Tette).

Anguilla labiata PETERS, Sitzs. Ber. Akad. Wiss. Berlin, 1852, p. 684. (Archiv Naturg., 1855, p. 270 (Tette, Boror)).  
 -- KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 41, (copied).  
 -- GÜNTHER, Fishes of Zanzibar, 1866, p. 124 (not text figure of dentition) (part). -- PETERS, Reise Mossambique, 1868, p. 94. -- MARTENS, Reise Ost. Afrika, van der Decken, vol. 3, pt. 1, 1869, p. 144 (Pangani, Zambesi, Licuare). -- PETERS, Monatsb. Akad. Wiss. Berlin, 1876, p. 445 (Mauritius). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 8, 1881, p. 7 (Ponape). -- POHL, Cat. Mus. Godeffroy, -- PFEFFER, Jahrb. Hamburg. Anst., vol. 10, 1893, p. 94 (Mozambique); Fische Ost Afrika, 1896, p. 71. -- WEBER, Nova Guinea, vol. 5, pt. 2, 1908, p. 227 (Klipong River, northern New Guinea). -- BARNARD, Ann. South African Mus., vol. 21, pt. 2, Oct. 1927, p. 1018 (remarks on Schmidt's Lake Mjasa specimen).

Anguilla elphinstonei (not SYKES) BLEEKER, Nat. Tijds. Nederland. Indië, vol. 4, 1853, p. 504.

Muraena maculata (not BUCHANAN HAMILTON) BLEEKER, Atlas Ichth. Ind. Neerland., vol. 4, 1864, p. 9, pl. 1, fig. 2 (Java, Bale, Sumatra, Borneo, Celebes, Ternate, Batjan, Buro, Amboina, Ceram, Luzon).

Anguilla (Muraena) marmorata (not QUOY and GAIMARD) KNER, Reise Novara, Fische, 1865, p. 369 (Hong Kong; not Tahiti material).



Muraena manillensis BLEEKER, Nederland. Tijds Dierk., vol.

2, 1865, p. 31. Manila Bay; Atlas Ichth. Ind. Nederland.,  
vol. 4, 1864, p. 10, pl. 44, fig. 2 (Luzon). -- SCHMELTZ,  
Cat. Mus. Godeffroy, No. 4, 1869, p. 26 (Kandava). --  
FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 39 (compiled).

Anguilla manillensis JORDAN and EVERMANN, Proc. U. S. Nat.

Mus., vol. 25, 1902, p. 325 (Kotosho, Formosa). -- JORDAN  
and THOMPSON, Mem. Carnegie Mus., vol. 4, No. 4, Aug. 28,  
1909, p. 171 (copied). -- GÜNTHER, Journ. Mus. Godeffroy,  
vol. 9. pt. 17, 1910, p. 390 (Ponape). -- WEBER, Zool.  
Jahrb. Suppl. Festschr., vol. 15, pt. 1, 1912, p. 574  
(compiled); Siboga Exped., vol. 57, Fische, 1913, p. 32  
(reference).

Anguilla johannae GÜNTHER, Fishes of Zanzibar, 1866, p. 124,

text fig. (dentition). Fresh waters of Island of Johanna. --  
MARTENS, Reise Ost. Afrika, van der Decken, vol. 3, pt. 1,  
1869, p. 144 (Johanna).

Anguilla fidjiensis GÜNTHER, Cat. Fishes Brit. Mus., vol. 8,

1870, p. 26. Kandavu, Feejees. -- SCHMELTZ, Cat. Mus.  
Godeffroy, No. 5, 1874, p. 37 (Kandavu; Tongatabu); No. 7,  
1879, p. 59 (Viti and Tonga Islands). -- ELÉRA, Cat. Fauna  
Filip., vol. 1, 1895, p. 586 (Luzon; Manilla). -- GÜNTHER,  
Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 390 (Viti  
Levn, Levuka, Kandavu, Nairai).



Anguilla latirostris (not RISSO) GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 32 (Ningpo, China). -- SAUVAGE and DE THIERSANT, Ann. Sci. Nat., ser. 6, vol. 1, Zool., 1874, p. 16 (China).

Anguilla bengalensis (not GRAY) SCHMELTZ, Cat. Mus. Godeffroy, No. 5, 1874, p. 37 (Upolu); No. 7, 1879, p. 59 (Upolu). -- POHL, Cat. Mus. Godeffroy, No. 9, 1884, p. 40 (Upolu). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1900, p. 524 (Samoa); Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. (Padang).

Anguilla hildebrandti (PETERS) SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 499, pl. 49<sup>a</sup>, fig. 1, North west Madagascar.

Depth 14 to 18; head  $5 \frac{9}{10}$  to  $7 \frac{1}{2}$ ,  $2 \frac{2}{3}$  to 3 in vent, width  $1 \frac{5}{6}$  to 2 in its length. Snout  $4 \frac{1}{2}$  to  $5 \frac{1}{8}$  in head from snout tip; eye  $7 \frac{1}{8}$  to  $12 \frac{1}{2}$ , 2 to  $2 \frac{2}{5}$  in snout,  $1 \frac{4}{5}$  to 2 in interorbital; maxillary  $2 \frac{3}{4}$  to  $3 \frac{1}{8}$  in head from snout tip; teeth in rather broad patch in front of each jaw, narrowing posteriorly in jaw; vomerine teeth often not separated from front teeth; interorbital  $4 \frac{1}{2}$  to 5, flattened. Gill openings 2 to  $2 \frac{1}{2}$  in mouth cleft.

Scales distinct, arranged in vertical series along sides.

Dorsal inserted little nearer gill opening than vent; anal origin premedian; pectoral  $2 \frac{3}{4}$  to  $3 \frac{4}{5}$  in total head length.

Above dark brown, mottled with pale or dull yellowish and olivaceous. Head and trunk below whitish. Narrow pale edge around vertical fins, posteriorly and submarginally narrow dark band around end of tail.

Zanzibar, Mozambique, Natal, Mauritius, Rodriguez, Madagascar, Seychelles, Ceylon, Andamans, East Indies, Philippines, China, Formosa, Japan, Queensland, Melanesia, Micronesia and Polynesia.

10803. Isabel Channel, Basilan Island, south of Zamboanga.

September 11, 1909. Length 484 mm.

A444. Manila market. March 16, 1908. Length 473 mm.

6286 and 6287. Manila market. June 11, 1908. Length 390 to 523 mm.

7893 and 7894. Mariveles River, Mariveles, Manila Bay. January 30, 1909. Length 515 to 575 mm.

9250. Nonucan River, Iligan Bay, Mindinao. August 6, 1909. Length 800 mm.

7885. Pucot River near Mariveles, Manila Bay. January 29, 1909. Length 503 mm.

A808 and A809. Zamboanga River. October 9, 1909. Length 468 to 482 mm.

A1240 and A1241. Ambon River. December 5, 1909. Length 535 to 888 mm.

A926. Gorontalo market, Gulf of Tomini, Celebes. November 15, 1909. Length 668 mm.

Muraena anguillaris (Müller)

Tribranchus anguillaris (PETERS) MÜLLER, Abhandl. Akad.

Wiss. Berlin, 1844, p. 193.

Anguilla macrocephala (not Muraena macrocephala LE SUEUR)

RAPP. Jahrb. Ver. Nat. Württemberg, 1849, p. 142, fig.

2 (Port Natal). -- MARTENS, Reise Ost. Afrika, van der

Decken, vol. 3, pt. 1, 1869, p. 144 (Natal).

Muraena (Anguilla) mossambica PETERS, Monatsb. Akad. Wiss.

Berlin, 1852, p. 684. Molumbo River, east of Mozambique;

Reise Mossambique, 1868, p. 98.



Anguilla mossambica KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 41 (copied). -- MARTENS Reise Ost. Afrika, van der Decken, vol. 3, pt. 1, 1869, p. 144 (Molumbo Bay 15 S. Lat.). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 28 (compiled). -- WEBER, Zool. Jahrb., Suppl. Festchr., vol. 15, pt. 1, 1912, p. 590 (compiled); Siboga Exp., vol. 57, Fische, 1913 p. 33 (reference). -- BOULENGER, Cat. Fresh Water Fishes Africa, vol. 3, 1915, p. 6 (Cape Colony; near Grahamtown; Buffalo River; Durban; Pietermaritzburg; Umfolosi; Zululand, Groot Olifant River; Transvaal): -- GILCHRIST and THOMPSON, Ann. South African Mus., 1917, p. 466, fig. 112 (from PETERS) (M'fongosi, Zululand; Mauzemtonto River, Transvaal; Isipingo, Natal); Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 301 (copied). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 177 (Orange River; Liesbeck stream near Cape Colony); pt. 2, Oct. 1927, p. 1018 (remarks).

Muraena (Anguilla) virescens PETERS, Monatsb. Akad. Wiss. Berlin, 1852, p. 684. Reise Mossambique, 1868, p. 101.

Anguilla virescens MARTENS, Reise Ost. Afrika, van der Decken, vol. 3, pt. 1, 1869, p. 144 (Licuare). --

GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 35 (Zanzibar; Seychelles); Philos. Trans. Roy. Soc., vol. 168, 1879, p. 471 (Rodriguez). -- PFEFFER, Jahrb. Hamburg Anst., vol. 10, 1893, p. 41 ( ). -- BOULENGER, Trans. Linn. Soc. London, vol. 2, pt. 12, 1907-9, (1908), p. 291 (Praslin).

Muraena virescens BLEEKER, Rech. Faune Madagascar, pt. 4, 1874, p. 72 (reference).

Anguilla delandi KAUP, Archiv Naturg., 1856, pt. 1, p. 56.

Great Fish Bay, Cape of Good Hope (Paris Museum: no figure on description).

Anguilla delalandii KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 50, pl. 8, fig. 41. Great Fish River at Cape of Good Hope. -- BLEEKER, Nat. Tijds. Nederland. Indië, vol. 21, 1860, p. 56 (reference). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 33 (South Africa). -- SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 493. -- GILCHRIST, Cat. Fishes South Africa, 1902, p. 154 (reference).

Anguilla marmorata (QUOY and GAIMARD) KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 43, pl. 6, fig. 32 (head) (Bourbon). -- GUICHENOT, Notes Ile Reunion, vol. 2, 1862, p. 30. -- MARTENS, Reise Ost. Afrika, van der Decken, vol. 3, pt. 1, 1869, p. 144 (Reunion).

Anguilla capensis KAUP, Abhandl. Nat. Ver. Hamburg, vol. 4, pt. 2, 1859, p. 18, pl. 2, fig. 2, Cape of Good Hope. -- CASTLENAU, Poiss. Afrique Australe, 1861, p. 73 (rivers of Cape Colony and Kaffraria).

Anguilla labiata GÜNTHER, Fishes of Zanzibar, 1866, p. 124, text fig. (dentition). Pangani River; East Central Africa; Cat. Fishes Brit. Mus., vol. 8, 1870, p. 26 (Zanzibar; Port Natal). -- PETERS, Monatsb. Akad. Wiss. Berlin, 1876, p. 445 (Mauritius). -- GILCHRIST, Cat. Fishes South Africa, 1902, p. 155.

Anguilla amblodon GÜNTHER, Fishes of Zanzibar, 1866, p. 125, text fig. (dentition). Fresh waters of Seychelles. -- MARTENS, Reise Ost. Afrika, van der Decken, vol. 3, pt. 1, 1869, p. 144 (Seychelles). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 37 (type).

Muraena amblodon BLEEKER, Rech. Faune Madagascar, pt. 4, 1874, p. 72 (reference).

Muraena anguilla (not LINNAEUS) JOUÁN, Mem. Soc. Sci. Cherbourg, ser. 2, vol. 5, 1870, p. 106 (Seychelles).

Anguilla sidat (not BLEEKER) GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 36 (part).



Anguilla bengalensis (not GRAY) BOULENGER, Proc. Zool.

Soc. London, 1902, nt. 2, p. 224 (Mathoiya River, Kenya District, East Africa); 1907, pt. 1, p. 311 (Groot Olifant River); Cat. Fresh Water Fishes Africa, vol. 3, 1915, p. 7, fig. 5 (South Africa; Tama; Buffalo River near King Williamstown; Johanna, Camoro Islands). -- GILCHRIST and THOMPSON, Ann. South African Mus., 1917, p. 467, fig. 111 (Orange River; M'fongosi, Zululand); Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 300 (reference). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 177 (Zululand, Natal, Transvaal, Cape Province).

Anguilla australis (not RICHARDSON) Zool. Jahrb. Suppl.,

vol. 15, pt. 1, 1912, p. 593 (part). -- BOULENGER, Cat. Fresh Water Fishes Africa, vol. 3, 1915, p. 9 (part). -- GILCHRIST and THOMPSON, Ann. South African Mus., vol. 11, March 20, 1913, p. 469, fig. 114 (compiled). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 177 (Lake Usilonde, Zululand).

Muraena celebesensis (Kaup)

Anguilla clebensis KAUP, Archiv Naturg., 1856, pt. 1, p.

56. "Paris" [Museum; no figure or description; error].

Anguilla celebesnsis KAUP, Cat. Apodal Fish Brit. Mus.,

1856, p. 42, pl. , fig. 31. Celebes (error).

Anguilla celebesensis WEBER, Zool. Jahrb. Suppl. Festschr.,

vol. 15, pt. 1, 1912, p. 585, fig. c-f (Mangareva, Austral Islands, Samoa, Cook Island, Wavaw, Tubuai, Marquisas, Tahiti, Aneiteum, Raiatea, Solomon, Roon, Luzon, Australia, East Indies, South Africa, Madagasear); Siboga Exp., vol. 57, Fische, 1913, p. 39 (Salibabu; Nusa Laut). --

WEBER and BEAUFORT, Nova Caledonia, Sarasin and Roux, Zool., vol. 2, pt. 1, 1913, p. 21 (Mt. Panie); Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 247, fig. 99 (front half of body), fig. 101 (dentition) (Simalur; Nias; Salibabu; Nusa Laut; Timor; Kei; Roon; New Guinea). -- HERRE, Philippine Journ. Sci., vol. 23, No. 2, 1923, p. 136, fig. 1, (teeth) (Lake Lanao).

Muraena celebesensis BLEEKER, Atlas Ichth. Indië, Neerland,

vol. 4, 1864, p. 115 (on KAUP). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 36 (Rarotonga, Rubuai, Tahiti, Samoa, Polynesia, Papeete, Society Islands); vol. 11, No. 5, 1931, p. 315 (references).

Anguilla marmorata QUAY and GAIMARD, Voy. Uranie, Zool., 1824, p. 241, pl. 51, fig. 2. Waigiu. -- KAUP, Archiv Naturg., 1856, p. 55 (compiled); Cat. Apodal Fish Brit. Mus., 1856, p. 43, pl. 6, fig. 32 (head) (Bourbon). -- GUICHENOT, Notes Ile Reunion, vol. 2, 1862, p. 30. -- SCHMETZ, Cat. Mus. Godeffroy, No. 1, 1864, p. 10 (South Sea); No. 3, 1866, p. 11 (Samoa); No. 4, 1869, p. 25 (Samoa). -- MARTENS, Reise. Ost. Afrika, van der Decken, vol. 3, pt. 1, 1869, p. 144 (Reunion).

Anguilla (Muraena) marmorata KNER, Reise Novara, Fische, 1865, p. 369 (Tahiti; Hong Kong).

Anguilla auchlandii RICHARDSON, Ichth. Voy. Erebus and Terror, 1844-48, p. 113, pl. 45, figs. 7-13. Auckland Islands. -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 33 (types). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 6, 1877, p. 18 (Gayndah). -- HECTOR, Handbook New Zealand, 1879, p. 16.

Anguilla auclandi KAUP, Archiv Naturg., 1856, pt. 1, p. 56 (reference; error).

Anguilla delalandi KAUP, Archiv Naturg., 1856, pt. 1, p. 56. Great Fish River, Cape of Good Hope (Paris Museum; no description or figure); Cat. Apodal Fish Brit. Mus., 1856, p. 50, pl. 8, fig. 41 (dentition). Great Fish River of Cape of Good Hope.



Anguilla delalandii GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 33 (South Africa). -- SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, p. 498 (Mauritius; Madagascar).

Anguilla lalandei SAUVAGE, Hist. Nat. Madagascar, Poiss., 1891, pl. 50, fig. 6,

Anguilla megastoma KAUP, Archiv Naturg., 1856, pt. 1, p. 56.

"Mulgran" (no description or figure); Cat. Apodal Fish Brit. Mus., 1856, p. 50, pl. , fig. 42. "Megrava" (Mulgrave Archipelago?). -- SEALE, Occas. Pap. Bishop Mus., vol. 4, No. 1, 1906, p. 5 (Rarotonga, Cook Island). -- JORDAN and SEALE, Bull. Bur. Fisher, vol. 25, 1905 (1906), p. 192 (Apia).

Anguilla guttata (CUVIER) KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 43 (name in synonymy). From Voyage of Peron.

Anguilla otaheitensis KAUP, Abhandl. Geb. Nat. Hamburg, vol. 4, 1860, p. 17, pl. 2, fig. 2. Tahiti. -- GÜNTHER, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 58 (Lake Waihirra, Tahiti); Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 390 (type; Raiatea and Treasury Islands. Solomons). -- KENDALL and GOLDSBOROUGH, Mem. Mus. Comp. Zool., vol. 26, 1911, p. 244 (Papeete, Tahiti).

Anguilla amboinensis PETERS, Monatsb. Akad. Wiss. Berlin, 1866, p. 523. Amoboina. -- KARÓLI, Termesz. Füzetek, Budapest, vol. 1, 1876, p. 405 (Amboina River). -- KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, Math.-naturw. Klasse, vol. 30, pt. 1, 1879, p. 419 (Port Phillip). -- MEYER, Anal Soc. Espan. Hist. Nat. Madrid, vol. 14, 1885, p. 43 (Laguna de Bay, Luzon). -- ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 587 (Luzon, Manila).

Anguilla aneitensis GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 34, fig. (teeth). Aneiteum, New Hebrides. -- MACLEAY, Proc. Linn. Soc. New South Wales, vol. 4, 1879, p. 64 (Solomons). -- GÜNTHER, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 58 (Lake Waihirra, Tahiti); Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 391 (Aneiteum, Vavu, Tahiti).

Anguilla obscura GÜNTHER, Proc. Zool. Soc. London, 1871, p. 673. Kanathea, Fiji. -- SCHMELTZ, Cat. Mus. Godeffroy, No. 7, 1879, p. 59 (Viti Islands). -- GÜNTHER, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 392 (type).

Muraena japonica (Schlegel)

Anguilla japonica SCHLEGEL, Fauna Japonica, Poiss., pts. 10-14, 1846, p. 258. Japan. -- BLEEKER, Verh. Batav. Genootsch. (Nal. Ichth. Japan), vol. 25, 1853, p. (19) 51 (Nagasaki); Act. Soc. Sci. Ind. Neerland, No. 3, 1857-58, p. 3 (Kioesio), p. 6 (Japan). -- KNER, Reise Novara, Fische, 1865, p. 370 (Shanghai). -- SAUVAGE and DE THIERSANT, Ann. Sci. Nat., ser. 6, vol. 1, Zool., 1874, p. 18 (China). -- MARTENS, Preuss. Exp. Ost-Asien, vol. 1, 1876, p. 405 (Shanghai; Yokohama). -- MÖLLENDORFF, Journ. North China Branch Roy. Asiatic Soc., Shanghai, new ser., vol. 11, 1877, p. 105. -- PETERS, Monatsb. Akad. Wiss. Berlin, 1880, p. 926 (Ningpo). -- KAROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 184 (Ningpo; Yokohama). -- MORRISON, Ann. Mag. Nat. Hist., ser. 7, vol. 1, 1898, p. (Japan). -- JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 348 (Yokohama); vol. 23, 1901, p. 842 (Hakodate, Aomori, Same, Matsushima, Sendai, Tokyo, Nusaki, Wakanoura, Ormura Bay, Kurume, Nagasaki). -- JORDAN and FOWLER, Proc. U. S. Nat. Mus., vol. 25, 1902, p. 417 (Yodo River, Osaka). -- FRANZ, Abhandl. Senckenberg. Gesell., vol. 4, Suppl. band 1, 1910, p. 9 (Yokohama; Oyama). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 8 (Yodo River, Wakanoura, Matsushima, Kurume). --



TANAKA, Fig. Descr. Fishes Japan, vol. 9, Nov. 26, 1912, p. 148, pl. 40, fig. 152-154 (Tokyo). -- JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, No. 4, Sept. 1914, p. 233 (Okayama). -- FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 58, 1920, p. 308 (Soochow). -- IZUUKA and MATSUURA, Cat. Zool. Spec. Tokyo Mus., Vertebr., 1920, p. 173 (Mogawa and Saikawa). -- JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 190 (Mikawa Bay, Himeji; Lake Suwa; Lake Hakone, Fukuoka; Lake Togo; Lake Mikata; Lake Kassimaura; Soo Show, China). -- NICHOLS and POPE, Bull. Amer. Mus. Nat. Hist., vol. 54, art. 2, Sept. 12, 1927, p. 326, fig. 1 (Nodda, Hainan). -- EVERMANN and SHAW, Proc. California Acad. Sci., ser. 4, vol. 16, No. 4, Jan. 31, 1927, p. 101 (Shanghai; Hangchow). -- WU, Contrib. Biol. Lab. Sci. Soc. China, vol. 5, No. 4, 1929, p. 29 (Amoy). -- TCHANG, Contrib. Biol. Lab. Sci. Soc. China, vol. 4, No. 4, 1929, p. ( ). -- ANONYMOUS, Illustrat. Jap. Aquat. Animals, vol. 1, 1931, pl. 20, fig. 3. -- HERRE and MYERS, Lignan Sci. Journ., vol. 10, Nos. 2-3, August 1931, 248 (Canton). -- SOWERBY, Naturalist in Manchuria, vol. 4, 1931, pl. 18.

Muraena japonica FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1929, p. 592 (Shanghai), p. 601 (Hong Kong); Hong Kong Naturalist, vol. 3, No. 1, March 1932, p. 49, fig. 1 (Hong Kong, Japan).

Conger anago (not SCHLEGEL p. 259) SCHLEGEL, Fauna Japonica, Poiss., pt. 10-14, 1846, pl. 113, fig. 2 (error).

Muraena pekinensis BASILEWSKY, Nouv. Mem. Soc. Nat. Moscow, vol. 10, 1855, p. 246, pl. 3, fig. 2. Pekin.

Anguilla pekinensis SOWERBY, Naturalist in Manchuria, vol. 4, 1931, p. 109 (Yalu River near Ch'ia'ow).

Anguilla bostoniensis (not AYRES) GÜNTHER, Cat. Fishes Brit. Mus., vol. 8 1870, p. 31 (Japan, North China, China, Formosa).

Anguilla vulgaris (not TURTON) STEINDACHNER, Denks. Akad. Wiss. Wien, Math.-naturw. Klasse, vol. 59, pt. 1, 1892, p. 370 (Seoul). -- ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 7. -- STEINDACHNER, Wiss. Res. Szechenyi in Ost-Asien, 1898, p. 508 (Hong Kong).

Anguilla bengalensis (not GRAY) ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 7.

Anguilla mauritiana (not BENNETT) ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 7.

Anguilla remifera JORDAN and EVERMANN, Proc. U. S. Nat. Mus., vol. 25, 1902, p. 325, fig. 7. Hokoto, Formosa. -- JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 4, No. 4, August 28, 1909, p. 171, fig. 8 (copied).

Anguilla novaeterrae (not KAUP) WU, Contrib. Biol. Lab. Sci. Soc. China, vol. 5, No. 4, 1929, p. 31, fig. 25 (head) (Amoy).

Depth  $15 \frac{3}{4}$  to  $24 \frac{1}{2}$ ; head  $7 \frac{1}{3}$  to  $8 \frac{4}{5}$ , width  $2 \frac{1}{2}$  to  $2 \frac{3}{5}$ , 3 to  $3 \frac{1}{3}$  to anal origin. Snout 5 to 6 in head from snout tip; eye 6 to 13, 2 in  $2 \frac{3}{5}$  snout,  $1 \frac{4}{5}$  to 2 in interorbital; maxillary reaches slightly beyond eye, length 3 to  $3 \frac{3}{5}$  in head from snout tip; teeth in narrow bands in jaws and on vomer, latter band only extends  $\frac{1}{3}$  far back as lateral bands; interorbital 5 to  $7 \frac{3}{4}$ , little convex. Gill opening  $1 \frac{1}{3}$  to 2 in snout.

Skin smooth, with small lozenge shaped scales, close set in skin, well oblique to body axis.

Dorsal origin before first third in length, like anal little higher behind; pectoral  $2 \frac{2}{5}$  to 4 in total head.

Olive brown above, belly and lower surfaces whitish. Iris brown. Vertical fins brownish. Pectoral pale, whitish below.

China, Formosa, Japan, Korea.

83986 U. S. N. M. Soochow, China. N. Gist Gee. Length 380 mm.

48193 U. S. N. M. Urakawa, Japan. S. Nozawa. Length 266 mm.



Muraenae reinhardti (Steindachner)

Anguilla reinhardti STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, Math.-naturw. Klasse, vol. 55, 1867, p. 15, figs. (head). Rockhampton, East Australia. -- CASTELNAU, Proc. Zool. Acclimat. Soc. Victoria, vol. 1, 1872, p. 192 (Western Port; Mordialloc River). -- OGILBY, Cat. Fishes New South Wales, 1886, p. 58; Proc. Linn. Soc. New South Wales, vol. , 1887, p. 765 (New Caledonia). -- WEBER, Jenaische Denkschr., vol. 8, 1895, p. 274 ( ); Zool. Jahrb. Suppl., Festschr., vol. 15, pt. 1, 1912, p. 575, figs. a-b (teeth) (North and East Australia and New Caledonia); Siboga Exp., vol. 57, Fische, 1913, p. 31 (reference). -- WEBER and BEAUFORT, Nova Caledonia, Sarasin and Roux, Zool., vol. 2, pt. 1, 1913, p. 21 (Tchalabel Mont Ignambi; Rive Cone; Cui; Coinde; La Foa).

Anguilla reinhardtii GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 27 (Hawkesbury River, Sydney, Cape York, Australia). -- CASTELNAU, Record London Internat. Exhib., 1873, pt. 7, No. 5, p. 16 (Victoria). -- MACLEAY, Proc. Linn. Soc. New South Wales, vol. 6, 1882, p. 267 (Sydney, Hawkesbury, Cape York, Richmond River). -- OGILBY, Handbook of Sydney, 1898, p. 119. -- STEAD, Fishes of Australis, 1906, p. 43, fig. 15 (New South Wales, Victoria, Queensland). -- MC CULLOCH, Fishes New South Wales, ed. 2, 1927, p. 23.

Muraena reinhardti FOWLER, Mem. Bishop. Mus., vol. 10, 1928,  
p. 36 (compiled).

Anguilla dieffenbachii GRAY, Zool. Miscellany, 1842, p. 73.  
River Thames, New Zealand; Travels Dieffenbach, Appendix,  
, p. 225 ( ). -- RICHARDSON, Ichth. Voy. Erebus  
Terror, 1844-48, p. 113 (no locality). -- KAUP, Archiv  
Naturg., 1856, pt. 1, p. 56 (reference).

Anguilla malgumora (SCHLEGEL) KAUP, Archiv Naturg., 1856, pt.  
1, p. 55. "Leyden" (Museum; no description or figure);  
Cat. Apodal Fish. Brit. Mus., 1856, p. 42, pl. 6, fig. 30  
(Borneo). -- WEBER, Zool. Jahrb. Suppl. Festschr., vol. 4,  
pt. 1, 1912, p. 288 (copied) (type); Siboga Exp., vol. 57.  
Fische, 1913, p. 33 (reference). -- WEBER and BEAUFORT,  
Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 248  
(type).

Anguilla (Muraena) malgumora KNER, Reise Novara, Fische, 1865,  
p. 367 (Australia).

Anguilla marginipinnis MACLEAY, Proc. Linn. Soc. New South  
Wales, vol. 8, July 17, 1883, p. 210. Lillesmere Lagoon,  
Burdekin River, Queensland.

Muraena dussumieri (Kaup)

Anguilla dussumieri KAUP, Archiv Naturg., 1856, p. 56.

"Paris" (Museum, no figure or description); Cat. Apodal  
Fish Brit. Mus., 1856, p. 51, pl. 8, fig. 43 (head and  
dentition). "Mahé, in Hindostan".

Anguilla dussumierii GÜNTHER, Cat. Fishes Brit. Mus., vol.  
8, 1870, p. 37 (copied).

Muraena dussumieri BLEEKER, Rech. Faune Madagascar, Pollen  
et Van Dam, vol. 4, 1874, p. 72 (reference).



Muraena spengeli (Weber)

Anguilla spengeli WEBER, Zool. Jahrb. Suppl., Festschr., vol. 15, pt. 1, 1912, p. 591, fig. G (teeth). Balik papam, East Borneo; Siboga Exp., vol. 57, Fische, 1913, p. 33 (reference). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 249 (Simalur; Nias; Papan, Borneo). -- HERRE, Philippine Journ. Sci., vol. 23, No. 2, 1923, p. 139, pl. 1, fig. 1 (Cotabato River, Mindanao).

Anguilla spengli DERANIYAGALA, Ceylon Administrat. Rep., 1925, p. F15.

Anguilla mowa (not BLEEKER 1850) BLEEKER, Verh. Batav. Genootsch. (Muraen.), vol. 25, 1852, p. 16 (part).

Muraena malgumora (not KAUP) BLEEKER, Atlas Ichth. Ind. Néerland., vol. 4, 1864, p. 11 (Java; Borneo).

Depth 21, 3 in head; head  $3 \frac{1}{8}$  to vent,  $7 \frac{7}{8}$  in total; head and trunk  $1 \frac{1}{2}$  in tail; head width 3 in its length. Snout 5 in head from snout tip; eye  $6 \frac{2}{5}$ ,  $1 \frac{1}{3}$  in snout,  $1 \frac{1}{4}$  in interorbital; mouth cleft reaches  $\frac{2}{3}$  in eye,  $3 \frac{2}{5}$  in head from snout tip; interorbital 5, low, depressed medially. Gill opening 8.

Lateral line distinct, axial.

Dorsal origin begins slightly behind anal origin; caudal  $6 \frac{1}{3}$  in total head length; pectoral  $5 \frac{2}{3}$ .

Brown above, under surfaces brownish white, especially on lower surface of head and belly. Dark color of head extends down as narrow streak under eye. Eye grayish. Vertical fins paler brown than back and anal paler than belly, edges of each also narrowly still paler.

Ceylon, Java, Borneo, Philippines.

18467. Sabatik pond. October 5, 1909. Length 340 mm.

Muraena australis (Richardson)

Anguilla australis RICHARDSON, Proc. Zool. Soc. London, 1841, p. 22. Port Authur, Tasmania, in fresh water; Trans. Zool. Soc. London, vol. 3, 1841, p. 157 (type). -- JENYNS, Zool. Voy. Beagle, Fishes, vol. 4, 1842, p. 142 (New Zealand). -- RICHARDSON, Ichth. Voy. Erebus and Terror, vol. 2, 1844-48, p. 112 (Tasmania, New Zealand, Auckland Island). -- KAUP, Archiv Naturg., 1856, pt. 1, p. 56 (reference); Cat. Apodal Fish Brit. Mus., 1856, p. 53 (Tasmania, New Zealand, Auckland Island). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 36 (types; New Zealand; Australia; South Australia). -- CASTELNAU, Proc. Zool. Soc. Victoria, vol. 1, 1872, p. 192 (Yarra, Victoria, Tasmania); Record London Internat. Exhib., 1873, pt. 7, No. 5, p. 16 (Victoria). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 5, 1874, p. 37 (Viti Leuw). -- CASTELNAU, Proc. Linn. Soc. New South Wales, vol. 3, 1878, p. (355) 396 (Port Jackson). -- HECTOR, Handbook New Zealand, 1879, p. 16. -- SCHMELTZ, Cat. Mus. Godeffroy, No. 7, 1879, p. 59 (Viti Levu). -- KLUNZINGER, Sitz. Ber. Akad. Wiss. Wien, Math.-naturw. Klasse, vol. 80, pt. 1, 1879, p. 418 (Yarra River). -- MACLEAY, Proc. Linn. Soc. New South Wales, vol. 6, 1881-82, p. 267 (Tasmania, Victoria, New South Wales). -- OGILBY, Cat. Fishes New South Wales, 1886, p. 58. -- PERUGIA, Ann. Mus. Civico Stor. Nat. Genova, vol. 34, 1894, p. 553 (Inawi, New Guinea). --



OGILBY, Handbook of Sydney, 1898, p. 119. -- JORDAN and SEALE, Bull. Bur. Fisher., 1905 (1906), p. 192 (Vaisigano and Gasegase streams about Apia). -- STEAD, Fishes of Australia, 1906, p. 44. -- WEBER, Abhandl. Senckenberg Nat. Gesell., vol. 34, 1911, p. 21 ( ); Zool. Jahrb. Suppl. Festschr., vol. 15, pt. 1, 1912, p. 593, fig. H (Tasmania, New Zealand, Auckland Island, South Australia, New South Wales, Samoa, Timor, Aru, East Indies, Tahiti, Mozambique, Natal, Bombay, Malabar, Burma, Farther India). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 9 (Victoria, Australia). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 42 (copied); Nova Guinea, vol. 9, pt. 4, 1913, p. 551 (Lorentz River at Bivak Island). -- BOULENGER, Cat. Fresh Water Fishes Africa, vol. 3, 1915, p. 9 (part). -- WEBER and BEAUFORT, Nova Caledonia, Sarasin and Roux, Zool., vol. 2, pt. 1, 1915, p. 20 (Oubatche, New Caledonia); Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 249 (Seband, Deli, Sumatra; Atjeh; Simalur; Nias; Buitenzorg, Bekassi, Gjikandi, Java; Lombok; Flores; Timor; Aru; Batjan; Lorentz River, South New Guinea). -- WAITE, Records South Australian Mus., vol. 2, No. 1, April 23, 1921, p. 48, fig. 72. -- HERRE, Philippine Journ. Sci., vol. 23, No. 2, August 1923, p. 138 (Lake Bato, Camarines; Cavite; Guam). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1923, p. 43 (Victoria example). -- DERANIYAGALA, Ceylon Administrat. Rep., 1925, p. F15. -- MC CULLOCH, Fishes New South Wales, ed. 2, 1927, p. 23, pl. 8, fig. 77a.

Muraena australis BLEEKER, Atlas Ichth. Ind. Néerland., vol. 4, 1864, p. 12, pl. 7, fig. 1 (Timor). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 26 (Namusi). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 37 (compiled); vol. 11, No. 5, 1931, p. 315 (compiled).

Anguilla bicolor MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 5, 1844, p. 178, pl. 6, fig. 1. Sandoway on Malay Coast. -- JERDON, Madras Journ. Lit. Sci., 1849, p. 346. -- BLEEKER, Verh. Batav. Genootsch., (Nat. Ich. Bengal), vol. 25, 1853, p. 76 (reference). -- MASON, Burmah Nat. Resources, 1860, p. 702 (reference). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 35 (Java, River Hoogly, Madras, Ceylon). -- BEAVAN, Fresh Water Fishes India, 1877, p. 159 (Bengal; Madras). -- DAY, Fishes of India, pt. 4, 1878, p. 660, pl. 167, fig. 3, pl. 168, fig. 2 (Andamans). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 7, 1879, p. 59 (Upolu). -- MEYER, Anal. Soc. Espan. Hist. Nat. Madrid, vol. 14, 1885, p. 43 (Manado, Celebes). -- DAY, Fauna Brit. India, Fishes, vol. 1, 1889, p. 87. -- VINCIQUERRA, Ann. Mus. Civico Stor. Nat. Genova, ser. 2, vol. 9, 1890, p. 358 (Rangoon). -- FOWLER, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, 1904, p. (Padang). -- DUNCKER, Mitteil. Naturh. Mus. Hamburg, vol. 29, 1911, p. 268 (Amuradhapura). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 9 (Padang and Batu Sangkar, Sumatra).

Anguilla moa BLEEKER, Verh. Batav. Genootsch. (Java), vol. 23, 1850, p. 22. Java. -- KNER, Reise Novara, Fische, 1865, p. 369 (no locality).

Muraena moa BLEEKER, Atlas Ichth. Ind. Néerland., vol. 4, 1864, p. 11, pl. 4, fig. 1 (Java; Sumatra).

Anguilla mowa BLEEKER, Verh. Batav. Genootsch. (Muraen.), vol. 25, 1852, p. 16. Batavia, Banjoimas, Arabarawa, Java. -- KAUP, Archiv Naturg., 1856, pt. 1, p. 56 (reference); Cat. Apodal Fish Brit. Mus., 1856, p. 51, pl. 8, fig. 44 (head) (Java).

Anguilla sidat BLEEKER, Verh. Batav. Genootsch. (Muraen.), vol. 25, 1852, p. 17. Tijkandi, Tjampea, Batavia, West Java. -- KAUP, Archiv Naturg., 1856, pt. 1, p. 56 (reference). -- KNER, Reise Novara, Fische, 1865, p. 368 (Tahiti). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 36 (type). -- MARTENS, Preuss. Exp. Ost-Asien, vol. 1, 1876, p. 405 (Batavia). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 7, 1879, p. 59 (Upolu). -- BOULENGER, Proc. Zool. Soc. London, 1890, p. 40 (Deli, Sumatra). -- WEBER, Zool. Ergebn. Reise Nederland Oost. Indië, vol. 3, 1894, p. 428 (Buitenzorg). -- JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 192 (Apia). -- GÜNTHER, Journ. Mus. Godeffroy, vol. 9, pt. 7, 1910, p. 392 (Tonga).



Muraena sidat BLEEKER, Atlas Ichth. Ind. Neerland., vol. 4, 1862, p. 10, pl. 3, fig. 3 (Java, Nias, Bali, Borneo, Sumatra, Celebes). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 26 (Samoa).

Anguilla bleekeri KAUP, Archiv Naturg., 1856, pt. 1, p. 56. India (no description or figure); Cat. Apodal Fish Brit. Mus., 1856, p. 52, pl. 9, fig. 45 (head). Java or India.

Anguilla cantori KAUP, Archiv Naturg., 1856, pt. 1, p. 56. Bombay (no description or figure); Cat. Apodal Fish Brit. Mus., 1856, p. 52, pl. 9, fig. 46 (head). Bombay.

Anguilla malabarica KAUP, Archiv Naturg., 1856, pt. 1, p. 56. No locality (Paris Museum; no description or figure); Cat. Apodal Fish Brit. Mus., 1856, p. 52, pl. 9, fig. 47 (head). Malabar.

Anguilla nigro-punctata (CUVIER) KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 53. No locality (Paris Museum example from Voyage of Peron; name in synonymy).

Muraena halmaherensis BLEEKER, Nederland. Tijds. Dierk., vol. 1, 1863, p. (154) 158. Galela, Halmaheira; Atlas Ichth. Ind. Neerland., vol. 4, 1864, p. 12, pl. 6, fig. 4 (type). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 26 (Kandavu); No. 7, 1879, p. 60 (Kanathia).

Anguilla halmaherensis SCHMELTZ, Cat. Mus. Godeffroy, No. 5,  
1874, p. 37 (Kanathia).

Muraena malgomura (not KAUP) SCHMELTZ, Cat. Mus. Godeffroy,  
No. 4, 1869, p. 25 (Upolu).

Anguilla virescens (not PETERS) SCHMELTZ, Cat. Mus. Godeffroy,  
No. 5, 1874, p. 37 (Savay); No. 7, 1879, p. 59 (Savaii). --  
POHL, Cat. Mus. Godeffroy, No. 9, 1884, p. 40 (Savaii). --  
GUNTHER, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p.  
392 (Tahiti; Savay).

Muraena virescens BLEEKER, Rech. Faune Madagascar, pt. 4, 1874,  
p. 72 (reference).

Anguilla australis occidentalis SCHMIDT, Trans. New Zealand  
Inst., vol. 58, pt. 4, March 19, 1928, p. 388, ;  
Records Australian Mus., vol. 16, pt. 4, March 28, 1928,  
pp. 181, 198, 203, fig. 2, 3-8 (graphs), 9d-f (teeth)  
(Eastern Australia and Lord Hoive Island).

Depth  $13 \frac{1}{2}$  to  $17 \frac{3}{4}$ ; head  $7 \frac{1}{4}$  to 10, width  $2 \frac{4}{5}$  to 3, to vent 3 to 4. Snout  $5 \frac{1}{5}$  to  $5 \frac{3}{4}$  in head from snout tip; eye  $7 \frac{1}{2}$  to  $12 \frac{1}{2}$ ,  $1 \frac{3}{4}$  to 2 in snout, to in interorbital; maxillary reaches opposite hind eye edge, length  $2 \frac{2}{3}$  to  $3 \frac{2}{3}$  in head from snout tip; teeth in broad bands in jaws and on vomer, almost cover each jaw; interorbital  $4 \frac{4}{5}$  to 7, convex. Gill opening equals mouth cleft or  $\frac{2}{3}$  of interorbital.

Scales distinct, imbedded, oblique to body axis.

D. about 220, origin but short space before vent; A. about 200; caudal  $5 \frac{2}{5}$  to  $5 \frac{1}{2}$  in total head length.

Dark gray to brown on back, belly and lower surfaces paler to whitish. Iris gray. Vertical fins like back. Pectoral pale.



1 exmaple. A. N. S. P. Padang, Sumatra. A. C. Harrison and  
H. M. Hiller. Length 359 mm.

1 example. A. N. S. P. Batu Sangkar, Sumatra. A. C. Harrison  
and H. M. Hiller. Length 150 mm.

1 example. A. N. S. P. Victoria, Australis. Mrs. Agnes F.  
Kenyon. Length 800 mm.

## Family SIMENCHELYIDAE

Snout very obtuse. Mouth transverse, jaws very strong. No lips. Teeth blunt, pluriserial in young, uniserial with age, in jaws only. Tongue very large, with free edges. Hind nostril before eyes. Gill openings well developed, well separated, horizontal, inferior. Branchiostegals long, bent upward behind. Skin with rudimentary embedded scales. Lateral line present. Pectoral with only 4 radials.

Genus Simenchelys Goode and Bean

Simenchelys (GILL) GOODE and BEAN, Bull. Essex Inst., 1879,  
p. 27. Type Simenchelys parasiticus (GILL) GOODE and  
BEAN, monotypic.

Conchognathus COLLETT, Bull. Soc. Zool. France, vol. 14,  
1889, p. 123. Type Conchognathus grimaldii COLLETT, mon-  
otypic.

Gymnosimenchelys TANAKA, Journ. College Sci. Tokyo, vol. 23,  
1910, p. 2. Type Gymnosimenchelys leptosomus TANAKA,  
monotypic.



Body elongate, eel shaped. Head very short, rounded, very obtuse or blunt anteriorly, slightly compressed. Mouth small, entirely anterior. Jaws equal, edges hard. Teeth small, uniserial, rounded close set, incisor like. No vomerine teeth. Mandible very deep, strong. Tongue broad, somewhat free anteriorly. Premaxillaries and maxillaries of each side coalesced and separated from each other by ethmoid. Lips full. Opercle sabre shaped. Nostrils large, front one with slight rim, not tubular. Gill openings very small, longitudinal, before and below pectorals. Scales linear, disposed at right angles. Lateral line faint. Vertical fins confluent around tail, dorsal begins not far behind pectorals. Pectoral short. Vent before anal, median.

One species in deep water, parasitic on larger fishes.

Simenchelys parasiticus Goode and Bean

Simenchelys parasiticus (GILL) GOODE and BEAN, Bull. Essex Inst., vol. 11, 1879, p. 27. -- BEAN, Proc. U. S. Nat. Mus., vol. , 1880, p. 113 (N.  $42^{\circ}37'$  W.  $66^{\circ}55'$ , 200 fathoms). -- JORDAN and GILBERT, Bull. U. S. Nat. Mus., No. 16, 1882, p. 363 (compiled). -- GÜNTHER, Rep. Voy. Challenger, vol. 22, 1887, p. 352 (compiled). -- JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1888 (1892), p. 669 (Grand Banks of Newfoundland). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 139, pl. 43, fig. 161 (N.  $38^{\circ}$  to  $42^{\circ}$  W.  $60^{\circ}$  to  $73^{\circ}$ ; Banquereaw; Sable Island Banks; 200 to 904 fathoms). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 349 (compiled). -- COLLETT, Res. Camp. Sci. Monaco, fasc. 10, 1896, p. 156, pl. 5, figs. 22-b, pl. 6, fig. 2 (north of Granciosa; north west of Sao Jorge; south of Flores; south east of Corvo; east of Corvo; south of Pica; between Pico and Sao Jorge, 844 to 2000 meters). -- ZUGMAYER, Res. Camp. Sci. Monaco, vol. 35, 1911, p. 83 (off Cape Verde Islands, 1300 meters, Azores, 1007 to 1250 meters). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 9 (N.  $42^{\circ}37'$  W.  $66^{\circ}55'$ , 200 fathoms). -- VAILLANT, Res. Camp. Sci. Monaco, vol. 52, 1919, p. 135 (off Azores N.  $37^{\circ}$  to  $39^{\circ}$  W.  $25^{\circ}$  to  $31^{\circ}$ , 880 to 1732 meters). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 181, pl. 8, fig. 6 (off Cape Point, 810 fathoms). --

TANAKA, Figures Descr. Fishes of Japan, vol. 42, June 4, 1928, p. 810, pl. 183, fig. 476 (Okinose, off Misaki; off Hitaka, Hokkaido).

Conchoganthus grimaldii COLLETT, Bull. Soc. Zool. France, vol. 14, 1889, p. 122. Granciosa, Fayal, Sao Jorge, Pico, Flores, Corvo, Azores, 844 to 2000 meters.

Gymnosimenchelys leptosomus TANAKA, Journ. College Sci. Tokyo, vol. 23, art. 13, 1908, p. 2, pl. 2, fig. 2. Off Misaki, Sagami.

Simenchelys leptosomus JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, No. 4, Sept. 1914, p. 233 (Izu).

Simenchelys dofleini FRANZ, Abh. Kaiser. Akad. Wiss. Bayer., Math. physik. Klasse, vol. 4, pt. 1, 1910, p. 10, pl. 3, figs. 1-2. Misaki.



Depth  $10 \frac{1}{2}$  to  $12 \frac{1}{4}$ ; head  $9 \frac{3}{5}$  to  $13 \frac{1}{2}$ , width  $1 \frac{7}{8}$  to  $2 \frac{1}{10}$ ; head  $5 \frac{1}{8}$  to  $5 \frac{1}{3}$  to anal origin. Snout  $3 \frac{1}{4}$  to 5 in head; eye 6 to 8 ,  $1 \frac{3}{4}$  to 2 in snout, 2 to  $2 \frac{1}{4}$  in inter-orbital; mouth  $\frac{1}{2}$  to eye, width  $2 \frac{2}{3}$  to 4 in head; small uniserial compressed close set teeth in jaws; interorbital  $2 \frac{3}{5}$  to 4 in head, well convex. Gill opening small horizontal slit below pectoral origin, length nearly equals eye, interspace between gill openings equals snout.

Skin smooth, small linear embedded scales disposed obliquely to lateral line.

Dorsal origin head length behind gill opening; anal origin well posterior; caudal 2 to  $2 \frac{1}{8}$  in head; pectoral  $2 \frac{1}{5}$  to  $2 \frac{1}{2}$ , low, upper median rays longest.

Brown, nearly uniform. Fins often more brownish.

North Atlantic and western Pacific.

31669 U. S. N. M. Banquereaux. G. W. Scott. Length 390 mm.

31727 U. S. N. M. N. 40 W. 68. Albatross Station. Length 320 mm.

## Family ILYOPHIDAE

Mouth terminal, lateral cleft extending behind eye. Maxillary slender, articulates with ethmoid near end of snout. Teeth conic, small, in narrow bands in jaws, large and uniserial on vomer. Nostrils lateral. Gill openings separated. Body scaly. Dorsal and anal continuous with reduced caudal. Pectorals present. Vent remote from head.

Genue Ilyophis Gilbert

Ilyophis GILBERT, Proc. U. S. Nat. Mus., vol. 14, 1892, p.

351. Type Ilyophis brunneus GILBERT, monotypic.

No lips. Lower jaw strong. Teeth on had and shaft of vomer continuous. Tongue little developed, with narrow free edge. Nostrils lateral, anterior with short tube near snout tip, posterior close before eye. Gill openings horizontal, inferior, well separated. Branchiostegals 15, not shortened, some curved around and above opercle. Body scaly. Lateral line prominent. Dorsal and anal confluent, rather high, rays visible through skin. Dorsal well advanced, begins immediately behind pectoral bases. Anal origin near end of anterior end of body.

Resembles Synaphobranchus, with separated gill slits. Long bowed branchiostegal rays as in Simenchelys.



Ilyophis brunneus Gilbert

Ilyophis brunneus GILBERT, Proc. U. S. Nat. Mus., vol. 14, 1892, p. 352. Albatross Station 2808, near Chatham Island, Galapagos, 634 fathoms. -- JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1888 (1892), p. 671 (copied). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 141, pl. 43, fig. 162 (type). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 350 (compiled). -- BARNARD, Ann. South African Mus., vol. 21. 21, pt. 1, June 1925, p. 182 (off Cape Point, 811 fathoms).

## Family SYNAPHOBRANCHIDAE

Body eel shaped. Head conic. Snout produced. Eye over middle of mouth cleft. Teeth in narrow bands or uniserial, rather small, conic, less numerous in young, present in jaws and on vomer. Tongue small. Mucous membrane of mouth black. Hind nostril before eye. Gill openings well developed, inferior, very close together, united into an oval groove below pectoral bases, separated by considerable isthmus within. Branchial openings in pharynx wide slits. Stomach very distensible. Muscular and osseous systems well developed. Skin with rudimentary embedded scales, lanceolate and placed at right angles or small, rounded and embedded in skin. Lateral line present. Vertical fins confluent around tail. Dorsal shorter than anal, begins close behind pectorals or behind vent, lower than anal. Pectoral well developed.

Deep sea eels.

Analysis of genera

- |   |                         |
|---|-------------------------|
| a <sup>1</sup> . Gill openings confluent. | <u>Synaphobranchus.</u> |
| a <sup>2</sup> . Gill openings separate.  | <u>Diastobranchus.</u>  |

Genus Synaphobranchus Johnson

Synaphobranchus JOHNSON, Proc. Zool. Soc. London, 1862, p.

169. Type Synaphobranchus kaupii JOHNSON, monotypic.

Histiobranchus GILL, Proc. U. S. Nat. Mus., vol. , 1883,

p. 255. Type Histiobranchus infernalis GILL, monotypic.

Head long, pointed. Mouth very long. Jaws about equal. Maxillaries lateral. Cardiform teeth sharp, broad band in each jaw, become uniserial forward, upper inner and lower outer ones somewhat enlarged. Vomerine teeth in narrow band anteriorly. Tongue long, not free. Nostrils large, anterior with short tube, posterior close before eye. Gill openings inferior, horizontal, convergent forward, somewhat confluent at surface but separated by considerable isthmus within. Branchiostegals peculiar, moderate, attached to sides of compressed ceratohyal and epihyal, slender, abbreviated, moderately bowed, not curved up above opercle. Scales linear, placed at right angles. Dorsal low, begins behind vent. Anal rather high, rays slender, branched, not embedded in skin. Vent near first fourth of body.



Analysis of species

- a<sup>1</sup>. Synaphobranchus. Dorsal begins behind vent.
- b<sup>1</sup>. Dorsal begins length of head behind vent.
- c<sup>1</sup>. Space between snout tip and pectoral origin equals space between latter and vent;  
pectoral 2 in head. pinnatus.
- c<sup>2</sup>. Space between snout tip and pectoral origin  
1 1/2 in space between latter and vent;  
pectoral 2 2/5 in head. brevidorsalis.
- b<sup>2</sup>. Dorsal begins 2/5 length of head behind vent;  
pectoral 1 2/3 in head. iraconis.
- a<sup>2</sup>. Histiobranchus. Dorsal begins before vent.  
bathybius.

Synaphobranchus pinnatus (Gray)

Muraena pinnata GRAY, Cat. Fish Gronow, 1854, p. 19. No locality.

Synaphobranchus pinnatus GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 23 (Madeira; types of *Synaphobranchus kaupii*); Ann. Mag. Nat. Hist., ser. , vol. 20, 1877, p. 445. -- JORDAN and GILBERT, Bull. U. S. Nat. Mus., No. 16, 1882, p. 364 (compiled). -- GÜNTHER, Rep. Voy. Challenger, vol. 22, 1887, p. 252, pl. 62, fig. A (off Brazil, 1200 fathoms; south of Japan, 565 fathoms; off Inosima, 345 fathoms; south of Philippines, 375 to 500 fathoms). -- VAILLANT, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 88, pl. 6, fig. 2 a-c (Morocco, Canaries, Sudan, Banc d'Arguin, Cape Verde Islands, Azores, 405 to 3200 meters). -- JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1888 (1892), p. 672 (Grand Banks of Newfoundland). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 143, pl. 44, fig. 164 (N. 28° to 41° W. 65° to 88°, 129 to 1451 fathoms). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 351 (compiled). -- ALCOCK, Cat. Deep sea Fishes Indian Mus., 1899, p. 195 (Arabian Sea, 459 to 824 fathoms; Challenger duplicate; American specimen). -- ZUGMAYER, Res. Camp. Sci. Monaco, vol. 35, 1911, p. 84 (Cape Verde Islands, 692 meters; Azores, 1229 to 3465 meters; Canaries, 1000 meters). --

FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 9  
 (N. 44°W. 58°30', 160 fathoms). -- ROULE, Res. Camp. Sci.  
 Monaco, vol. 52, 1919, p. 99, pl. 6, fig. 3 a-b (1 1/2  
 miles off Hierro, Canaries, 1786 meters; 6 miles south of  
 Sao Miguel, 1187 meters; 30 miles east of Terceira, 1805  
 meters; 12 miles north east of Sao Miguel, 1998 meters).  
 -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, 1925,  
 p. 183 (off Cape Point, Agulhas Bank, East London, 400 to  
 560 fathoms). -- TANAKA, Figures Descr. Fishes of Japan,  
 vol. 473 (Kushiro, Hokkaido).

Synaphobranchus kaupii JOHNSON, Proc. Zool. Soc. London, 1862,  
 p. 169, fig. (dentition). Madeira.

Synaphobranchus affinis GÜNTHER, Ann. Mag. Nat. Hist., ser. 4,  
 vol. 20, 1877, p. 445. Off Inosima (Enoshima), Japan. --  
 JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1900, p.  
 348 (deep sea off Tokyo); vol. 23, 1901, p. 844 (off Ham-  
 amatsu, Tokyo, Misaki). -- FRANZ, Abh. Kaiser. Akad. Wiss.  
 Bayer., vol. 4, Suppl. band 1, 1910, p. 11 (Yokohama;  
 Aburatsubo). -- JORDAN and HUBBS, Mem. Carnegie Mus., vol.  
 10, No. 2, June 27, 1925, p. 191 (Kushiro, Shizuoka,  
 Misaki).

Synaphobranchus taketae TANAKA, Zool. Mag. Tokyo, vol. 28, 1916,  
 p. 257. Off Watanoha, Province Rikuzen.

Synaphobranchus pinnatus var. paroipinnis ROULE, Bull. Inst.  
 Oceanogr. Monaco, No. 320, May 20, 1916, p. 1248. South  
 East of Portugal, 1500 meters.



Synaphobranchus brevidorsalis Günther

Synaphobranchus brevidorsalis GÜNTHER, Rep. Voy. Challenger, vol. 22, 1887, p. 255, pl. 63, fig. C. North of New Guinea, N.  $2^{\circ} 33'$  E.  $144^{\circ} 4'$ , 1070 fathoms; Hyalonema grounds off Japan, N.  $35^{\circ} 11'$  E.  $139^{\circ} 28'$ , 345 fathoms. -- BRAUER, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee Fische, 1906, p. 134 (S.  $1^{\circ} 40' 6''$  E.  $41^{\circ} 47' 1''$ , 693 meters). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 55 (S.  $2^{\circ} 37'$ ,  $7^{\circ}$  E.  $130^{\circ} 33' 4''$ ; Banda or Celebes Sea). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 335, fig. 163 (Ceram Sea; Banda or Celebes Sea). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 37 (types of Synaphobranchus brachysomus).

Synaphobranchus jenkinsi JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 845, fig. 2. Sagami Bay, off Enoshima, Japan. -- JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 191 (Misaki).

Synaphobranchus brachysomus GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 583, fig. 232. Off Kauai, 409 to 550 fathoms: off Bird Island; Oahu, 222 to 8000 fathoms.

Depth  $1 \frac{4}{5}$  to  $2 \frac{3}{4}$  in head,  $12 \frac{2}{3}$  to  $16 \frac{3}{4}$  to caudal base; head 7 to  $8 \frac{1}{2}$ ,  $2 \frac{1}{8}$  to  $3 \frac{4}{5}$  to vent, width  $3 \frac{1}{4}$  to  $3 \frac{3}{4}$  in head, length; combined head and trunk  $2 \frac{2}{5}$  to  $2 \frac{4}{5}$  to caudal base. Snout  $2 \frac{7}{8}$  to 4 in head from snout tip; eye  $5 \frac{1}{3}$  to  $6 \frac{4}{5}$ ,  $1 \frac{4}{5}$  to 2 in snout, slightly greater to subequal with interorbital; mouth cleft  $1 \frac{3}{5}$  to  $1 \frac{2}{3}$ , extends  $\frac{4}{5}$  to  $1 \frac{1}{5}$  eye diameters behind eye; teeth in narrow bands in jaws; small, patch on premaxillary and head of vomer; interorbital  $5 \frac{1}{2}$  to 8 in head from snout tip, convex. Gill opening  $5 \frac{1}{8}$  to  $6 \frac{1}{2}$ .

Scales rudimentary, oblong, very small, embedded in skin and extended forward to eyes.

Dorsal origin variably over to head length posterior to vent, fin height  $\frac{1}{2}$  to 1 in eye; anal height  $3 \frac{1}{5}$  to  $4 \frac{4}{5}$  in total head length; caudal  $4 \frac{1}{5}$  to  $5 \frac{1}{6}$ ; pectoral  $2 \frac{1}{8}$  to  $2 \frac{3}{5}$ .

Largely uniform dark brown. Under surface of head and gill openings more or less dusky to blackish. Iris pale brown with grayish.

Indian and Pacific Oceans.

- 10199 and 10200. D. 5467. Atulayan Island (S.), S.  $79^{\circ}$ W., 2.5 miles (N.  $13^{\circ}35'27''$  E.  $123^{\circ}37'18''$ ), east coast Luzon, in 480 fathoms. June 18, 1909. Length 403 to 467 mm.
10293. D. 5470. Atulayan Island (E.), S.  $68^{\circ}$ W., 6.7 miles (N.  $13^{\circ}37'30''$  E.  $123^{\circ}41'09''$ ), east coast Luzon. In 560 fathoms. June 18, 1909. Length 364 mm.
10264. D. 5410. Bagacay Point Light, S.  $37^{\circ}$ W., 7.2 miles (N.  $10^{\circ}28'45''$  E.  $124^{\circ}5'30''$ ), between Cabu and Leyte. In 385 fathoms. March 18, 1909. Length 385 mm.
2343. D. 2515. Palanog Light, S.  $5^{\circ}30'$  E., 8.50 miles (N.  $12^{\circ}31'30''$  E.  $123^{\circ}35'24''$ ), east of Masbate. In 604 fathoms. April 21, 1908. Length 398 mm.
3369. D. 5406. Ponsón Island (N.), S.  $88^{\circ}$ E., 10.2 miles (N.  $10^{\circ}49'3''$  E.  $124^{\circ}22'30''$ ), Dupon Bay, Leyte, vicinity. In 298 fathoms. March 17, 1909. Length 257 mm.
3875. D. 5601. Limbe Island (NE.), N., 20.7 miles (N.  $1^{\circ}13'10''$  E.  $125^{\circ}17'5''$ ), Gulf of Tomini, Celebes. In 765 fathoms. November 13, 1909. Length 196 mm. This and next both show belly and lower surface of head neutral dusky or dark neutral gray.
4096. D. 5656. Olang Point, N.  $67^{\circ}$ W., 14.5 miles (S.  $3^{\circ}17'40''$  E.  $120^{\circ}36'45''$ ), Gulf of Boni, Celebes. In 484 fathoms. December 19, 1909. Length 224 mm.



Synaphobranchus iraconis Jordan and Snyder

Synaphobranchus iraconis JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 844, fig. 1. Off Myiaka, Rikuchu, Japan, 200 fathoms.

Synaphobranchus bathybius Günther

Synaphobranchus bathybius GÜNTHER, Ann. Mag. Nat. Hist., ser. 4, vol. 20, 1877, p. 445. Middle of North Pacific, south of Yeddo, midway between Cape of Good Hope and Kerguelen's Land; Rep. Voy. Challenger, vol. 22, 1887, p. 254, pl. 62, fig. B (type; south of Yeddo, 1875 fathoms; midway between Cape of Good Hope and Kerguelen Island, 1375 fathoms).

Histiobranchus bathybius JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1888 (1892), p. 673 (Bering Straits). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 145 (reference). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 352 (compiled).

Histiobranchus infernalis GILL, Proc. U. S. Nat. Mus., vol. 6, 1883, p. (253) 255. N.  $38^{\circ}30'30''$  W.  $69^{\circ}8'25''$ , 1731 fathoms.

Synaphobranchus infernalis JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1888 (1892), p. 673 (compiled). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 145, pl. 44, fig. 165 (N.  $38^{\circ}30'30''$  W.  $69^{\circ}8'25''$ , 1731 fathoms). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 352 (compiled).

Synaphobranchus australis REGAN, Trans. Royal Soc. Edinburgh,  
vol. 49, pt. 2, May 23, 1913, p. 235, pl. 8, fig. 5 (albino).  
S.  $48^{\circ}6'$  W.  $10^{\circ}5'$ , 1742 fathoms.

Genus Diastobranchus Barnard

Diastobranchus BARNARD, Ann. South African Mus., vol. 13, pt.  
8, 1923, p. 441. Type Diastobranchus capensis BARNARD.

Diastobranchus capensis Barnard

Diastobranchus capensis BARNARD, Ann. South African Mus., vol.  
13, pt. 8, 1923, p. 441. Off Cape Point, 470 fathoms; vol.  
21, pt. 1, June 1925, p. 185, pl. 8, fig. 7 (type).

## Family LEPTOCEPHALIDAE

Body moderately long. Mouth with lateral cleft not extending far behind eye. Maxillary articulated with ethmoid near snout end. Teeth conic, cardiform or compressed, in bands or in one or more series, well developed in jaws and on vomer. Tongue largely free in front. Nostrils lateral. Gill openings separated. Pharyngeal apertures of gill clefts wide. Pharyngeals ovate or oblong, covered with small teeth. Skin naked. Dorsal and anal continuous with reduced caudal. Vent remote from head.

Mostly large marine eels, found in most warm seas usually at moderate depths. Many undergo transformation, the young loosely organized, transparent, band shaped and with very small head. The body shrinks with increased age, owing to the compacting of the tissues.



Analysis of genera

- a<sup>1</sup>. Gill opening slit like, moderate to large.
- b<sup>1</sup>. Front nostrils in a tube.
- c<sup>1</sup>. Mouth cleft reaching to eye; teeth in broad bands in jaws and broad confluent patch on palate; muzzle obtuse, short; skull cavernous.

Promyllantor.

- c<sup>2</sup>. Mouth cleft reaches at least to middle of eye or beyond.
- d<sup>1</sup>. Teeth in bands in jaws, which not elongated.
- e<sup>1</sup>. Jaws with outer series of close set teeth forming cutting edge; dorsal begins behind pectoral base; skull not cavernous.

Leptocephalus.

- e<sup>2</sup>. Jaws with bands of uniform fine teeth, none forming cutting edge; mouth cleft reaches middle of eye; dorsal begins nearly or quite over gill opening; fore part of skull with large muciferous cavities.
- f<sup>1</sup>. Teeth granular, outer series acute; vomerine teeth well developed; head moderate, much less than trunk; eyes large; dorsal begins behind pectoral base; vent well premedian.

Congermuraena.

f<sup>2</sup>. Teeth acicular, upper not extended conspicuously forward beyond mandible; vomerine teeth well developed; head small much less than trunk; eyes large; dorsal above or nearly above pectoral little premedian. Ariosoma.

f<sup>3</sup>. Teeth acicular, upper extended forward beyond tip of closed mandible; head large, subequal with trunk; eyes smaller; dorsal above or nearly above pectoral base; vent far advanced. Bathycongrus.

d<sup>2</sup>. Teeth in bands in jaws, some of anterior outer ones directed or flaring somewhat outward; jaws elongated, upper slightly notched subterminally. Congrhynchus.

d<sup>3</sup>. Teeth uniserial in jaws; tail less than rest of body; front nostrils subtubular.

Coloconger.

b<sup>2</sup>. Front nostrils not tubular, as simple rounded pores.

g<sup>1</sup>. Teeth in jaws and on vomer.

h<sup>1</sup>. Dorsal begins over or behind pectoral base; tail tapering, slender; color uniform.

Uroconger.

h<sup>2</sup>. Dorsal begins before gill opening;

tail normal; body banded, head with

dark blotches. Poeciloconger.

g<sup>2</sup>. No teeth in jaws or on vomer.

Veternio.

a<sup>2</sup>. Gill opening circular, small, below pectoral.

Silvesterina.



Genus Promyllantor Alcock

Promyllantor ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 6, 1890, p. 310. Type Promyllantor purpureus ALCOCK, monotypic.

Body rather robust, little less than tail. Head moderate, with well developed muciferous cavities. Snout broad, rather short, obtuse. Eye moderate, well advanced, high. Jaws hidden by very thick inflated lips, mouth cleft reaching eye and lower jaw little shorter. Teeth villiform, in broad bands in jaws and broad confluent patch on palate. Tongue free. Nostrils lateral, front one short wide tube inferiorly at snout tip, hind one large, circular, above front angle of orbit. Gill openings small, widely separated, hardly larger than eye. No gill rakers. Lateral line axial. Vertical fin confluent, high. Dorsal begins behind ends of pectorals. Pectoral inserted nearly median in body depth.

Analysis of species

- |   |                   |
|---|-------------------|
| a <sup>1</sup> . Eye 1 1/4 to 1 1/2 in snout. | <u>purpureus.</u> |
| a <sup>2</sup> . Eye 3 to 3 1/2 in snout.     | <u>alcocki.</u>   |

Promyllantor purpureus Alcock

Promyllantor purpureus ALCOCK, Ann. Mag. Nat. Hist., ser.  
6, vol. 6, 1890, p. 310. ;

Illustrat. Zool. Investigator, pt. 1, 1892, pl. 6, fig.

2. -- GOODE and BEAN, Oceanic Ichth., 1895, p. 139

(reference). -- ALCOCK, Journ. Asiatic Soc. Bengal, vol.

65, pt. 2, 1896, p. 337 (reference); Cat. Deep Sea Fishes  
Indian Mus., 1899, p. 202 (type).

Depth  $1 \frac{7}{8}$  to 2 in head, 10 to  $10 \frac{1}{4}$  caudal base; head  $5 \frac{1}{4}$  to  $5 \frac{4}{5}$ ,  $2 \frac{1}{2}$  to  $2 \frac{3}{5}$  to vent, width  $2 \frac{4}{5}$  to  $2 \frac{7}{8}$  its length; combined head and trunk  $1 \frac{1}{8}$  to  $1 \frac{1}{3}$  in tail to caudal base. Snout  $3 \frac{2}{5}$  to 4 in head; eye  $4 \frac{3}{4}$  to  $5 \frac{1}{2}$ ,  $1 \frac{1}{4}$  to  $1 \frac{1}{2}$  in snout, greater than interorbital; mouth cleft reaches nearly to eye, length  $4 \frac{3}{4}$  in head; teeth short, fine, uniform, villiform, in broad bands in jaws and equally broad band over most of entire region of vomer or palate; front nostril at lower front side of snout, posterior at last third of snout; interorbital 6 to  $6 \frac{3}{5}$  nearly level. Gill opening small,  $7 \frac{1}{4}$  to 9 in head, short oblique slit before and below pectoral base.

Lateral line axial, well marked. Numerous short black filaments over head, as row postocular, another transversely over occiput and numerous ones scattered over lower surface of head; 3 or 4 predorsal pairs.

Dorsal origin begins opposite tip of depressed pectoral fins, fin height  $3 \frac{2}{5}$  to  $3 \frac{2}{3}$  in head; anal fin height  $3 \frac{2}{3}$  to  $4 \frac{2}{3}$ , caudal  $3 \frac{4}{5}$  to  $4 \frac{2}{5}$ , pointed; pectoral  $2 \frac{7}{8}$  to 3.

Uniformly dark drab brown. Iris dark neutral gray. Fins all dark brown.

Indian Ocean. The short black filaments of my example, present on the head and predorsal, are not shown on Alcock's figure, though in most every other way they agree.

4080, 10244. D. 5654. Cape Tabako, N.  $17^{\circ}$  E., 21.5 miles  
(S.  $3^{\circ} 42'$  E.  $120^{\circ} 45' 50''$ ), Gulf of Boni, Celebes. In 805  
fathoms. Length 250 to 342 mm.

10193. D. 5610. Batu Daka Island (S.), N.  $87^{\circ}$  W., 21.9 miles  
(S.  $0^{\circ} 36'$  E.  $122^{\circ} 1'$ ). November 19, 1909. In 678 fathoms.  
Length 332 mm.



Promyllantor alcocki Gilbert and Cramer

Promyllantor alcocki GILBERT and CRAMER, Proc. U. S. Nat. Mus., vol. 19, 1897, p. 405, pl. 36, fig. 1. N.  $21^{\circ}12''$  W.  $157^{\circ}49'$ , 295 fathoms. -- GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 584 (off Molokai; Pailolo Channel; Oahu; 238 to 334 fathoms). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 40 (compiled).

Genus Leptocephalus Gemlin

Leptocephalus GMELIN, Syst. Nat. Linn., vol. 1, 1789, p. 1150.

Type Leptocephalus morrissii GMELIN, monotypic. -- GRONOW, Zoophylacii, 1763, p. 135, species non-binomial. -- SCOPOLI, Introd. Hist. Nat., 1777, p. 453, atypic.

Conger SCHAEFFER, Stud. Ichth., 1760, p. 20. Atypic. (Type Muraena conger LINNAEUS, assumed tartonmy-inadmissible).

-- HOUTTUYN, Nat. Hist. Linn., vol. 7, pt. 1, 1764, p. 103. Type Muraena conger LINNAEUS, tautotypic (inadmissible). -- OKEN, Isis, 1817, p. 1182, a, (on CUVIER). Type Muraena conger LINNAEUS, virtually.

Morris BERKENHOUT, Syn. Nat. Hist. Great Britian, ed. 2, pt. 1, 1789, p. 65. Type Morris sp. BERKENHOUT = Leptocephalus taeniola MEUSCHEN.

Helmictis RAFINESQUE, Ind. Itt. Sicil., 1810, pp. 49, 62.

Type Helmictis punctatus RAFINESQUE, monotypic.

Pterurus RAFINESQUE, Ind. Itt. Sicil., 1810, pp. 49, 62. Type

Pterurus flexuosus RAFINESQUE, monotypic.

Oxyurus RAFINESQUE, Carrat. Animal Piant. Sicil., 1810, p. 19.

Type Oxyurus vermiformis RAFINESQUE, monotypic.

Helmichthys COSTA, Fauna Napoli, Pesc., 1844, fasc. 45.

Type Halmichthys diaphanus COSTA, monotypic.

Leptocephalichthys BLEEKER, Act. Soc. Sci. Ind. Neerland,

(Manadol), vol. 1856, p. 69. Type Leptocephalichthys hypselosoma Bleeker, monotypic.

Diaphanichthys PETERS, Monatsb. Akad. Wiss. Berlin, 1864, p.

399. Type Leptocephalus (Diaphanichthys) brevicaudus  
PETERS, monotypic.

Atopichthys GARMAN, Mem. Mus. Comp. Zool., vol. 24, 1899, p.

326. Type Atopichthys esunculus GARMAN, designated by  
JORDAN, Genera of Fishes, pt. 4, 1920, p. 486.

Microconger FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912,

p. 399. Type Leptocephalus caudalis FOWLER, orthotypic.

Astroconger JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10,

No. 2, June 27, 1925, p. 195. Type Anguilla myriaster  
BREVOORT, orthotypic.

Rhynchocymba JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10,

No. 2, June 27, 1925, p. 195. Type Leptocephalus nystromi  
JORDAN and SNYDER, orthotypic.

Rhynchoconger JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10,

No. 2, June 27, 1925, p. 196. Type Leptocephalus \_\_\_\_\_  
JORDAN and RICHARDSON, orthotypic.

Body very long, subcylindrical forward, compressed behind. Head depressed above, pointed in front. Eye well developed, covered by skin. Mouth wide, cleft extends below middle of eye. Mandible protrudes. Outer teeth in jaws equal, close set, forms cutting edge. No canines. Short pointed band of teeth on vomer. Lips thick. Tongue free in front. Front nostril in short tube near snout tip. Gill openings rather large, low, nearly vertical below pectoral bases. Vertebrae 156, of which 100 caudal. Lateral line present. Inconspicuous mucous cavities on head. Dorsal fin inserted close behind pectoral base, nearer latter than vent. Tail about half longer than vent.

Large marine eels living in most warm seas in moderate depths. Many undergo changes with age, the young fragile, transparent, band like and with very small head.

The following a doubtful species:

Leptocephalus fasciatus (Richardson)

Congrus fasciatus (GRAY) RICHARDSON, Ichth. China Japan, 1846, p. 321. China Sea (on Chinese drawing).

Conger fasciatus FOWLER, Hong Kong Naturalist, vol. 3, No. 1, March 1932, p. 51 (copied).



The following are not determinable:

Leptocephalus larva from Varadero Harbor, Mindoro. July 22, 1908. Length 63 mm.

Small example in very poor preservation. D. 5442. San Fernando Point Light, N.  $39^{\circ}$  E., 8.4 miles (N.  $16^{\circ}30'36''$  E.  $126^{\circ}11'6''$ ), west coast of Luzon. In 45 fathoms. May 10, 1909. Length 174 mm.

Analysis of species

a<sup>1</sup>. Premaxillary teeth entirely within closed mouth.

b<sup>1</sup>. Leptocephalus. Pores not surrounded by pigmented areas, confined on body to lateral line and sparsely developed on head.

c<sup>1</sup>. Dorsal origin opposite or behind ends of pectoral. wilsoni.

c<sup>2</sup>. Dorsal origin distinctly before ends of pectoral. cinereus.

b<sup>2</sup>. Astroconger. Pores surrounded by conspicuous pigmented areas, forming series below dorsal fin as well as along lateral line and densely developed on head anteriorly. myriaster.

a<sup>2</sup>. Premaxillary teeth entirely in front of mouth on lower surface of projecting snout; teeth in jaws in bands or in 2 series of similar size; tail more attenuated.

d<sup>1</sup>. Alloconger. Snout short, barely projects beyond premaxillary teeth (without pocket or keel on midline); teeth fewer and larger, in jaws mostly in rows, on vomer bluntly conic forming elongate triangular band (which separates maxillary rows). flavirostris.

d<sup>2</sup>. Snout long, its fleshy tip projecting sharply beyond premaxillary teeth; teeth in jaws fine, close set, form narrow bands, on vomer largely molar like, form broad patch.

e<sup>1</sup>. Rhynchocymba. Premaxillary patch of teeth much smaller than vomering patch and separated by widely confluent anterior ends of maxillary bands; anteroventral line of snout occupied by deep pocket; no enlarged pores between nostrils; hind nostril horizontal slit with entire rim.

nystromi.

e<sup>2</sup>. Rhynchoconger. Premaxillary patch of teeth longer than vomerine patch, in full contact, front ends of maxillary bands thus widely separated; anteroventral line of snout occupied by fleshy keel ending posteriorly in small free process; pair of enlarged pores between nostrils; hind nostril widely open, with fimbriate border.

ectenurus.

Leptocephalus wilsoni (Schneider)

Gymnothorax wilsoni SCHNEIDER, Syst. Ichth. Bloch, 1801, p.  
529. New Holland.

Conger wilsoni CASTELNAU, Proc. Zool. Acclimat. Soc. Victoria,  
vol. 1, 1872, p. 193 (Victoria); Record London Internat.  
Exhib., 1873, p. 16 (Victoria). -- WAITE, Records South  
Australian Mus., vol. 2, No. 1, April. 23, 1921, p. 49, fig.  
74. -- FOWLER, Occasion. Pap. Bishop Mus., vol. 8, No. 7,  
1923, p. 375 (Honolulu); Mem. Bishop Mus., vol. 10, 1928,  
p. 38, pl. 1c (Honolulu).

Conger japonicus BLEEKER, Verh. Kon. Akad. Wet. Amsterdam, vol.  
18, 1879, p. 32, pl. 2, fig. 2, Japan. -- FRANZ, Abh. Kon.  
Bayer. Akad. Wiss., vol. 4, Suppl. band 1, 1910, p. 11  
(Aburatsubu). -- JORDAN and HUBBS, Mem. Carnegie Mus., vol.  
10, No. 2, June 27, 1925, p. 194 (Misaki).

Leptocephalus japonicus JORDAN and SNYDER, Proc. U. S. Nat. Mus.,  
vol. 23, 1901, p. 851 (compiled).

?Congrus leucophaeus RICHARDSON, Ichth. Voy. Erebus and Terror,  
1844-48, p. 108. No locality.



Conger vulgaris (not CUVIER) SCHLEGEL, Fauna Japonica, Poiss., pt. 10, 14, 1846, p. 259 (Seas of Japan). -- BLEEKER, Verh. Batav. Genootsch. (Nalez. Ich. Japan), vol. 25, 1853, p. (19) 53 (Nagasaki); (Nalez. Ich. Japan), vol. 26, 1857, p. 6 (Nagasaki); Act. Soc. Sci. Ind. Néerland., No. 3, vol. 3, 1857-58, p. 6 (Japan); Naturk. Tijds. Nederland. Indië, vol. 20, 1859-60 (Nagasaki); Atlas Ichth. Ind. Néerland., vol. 4, 1864, p. 26 (Japan; part). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 7, 1870, p. 29 (East Indies; type of Congrus leucophaeus; Tasmania). -- MARTENS, Preuss. Exp. Ost-Asien, vol. 1, 1876, p. 405 (Yokohama). -- HECTOR, Handbook New Zealand, 1879, p. 16.

Conger labiata CASTELNAU, Proc. Linn. Soc. New South Wales, vol. 3, 1879, p. (355) 396. Port Jackson.

Leptocephalus labiatus OGILBY, Handbook of Sydney, 1898, p. 119. -- STEAD, Fishes of Australis, 1906, p. 44. -- MC CULLOCH, Fishes New South Wales, ed. 2, 1927, p. 23.

Conger conger (not LINNAEUS) STEINDACHNER, Ann. Naturk.

Hofinus. Wien, vol. 11, 1896, p. 221 (Kobe, Hiogo, Nagasaki). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 259 (specimen in BLEEKER'S collection).

Leptocephalus erebennus JORDAN and SNYDER, Proc. U. S. Nat.

Mus., vol. 23, 1901, p. 849, fig. 13. Misaki, Japan. -- SNYDER, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 406 (Misaki).

Leptocephalus kiusiuanus JORDAN and SNYDER, Proc. U. S. Nat.

Mus., vol. 23, 1901, p. 851. Hakata, Japan. -- SNYDER, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 406 (Misaki).

Depth  $2 \frac{1}{4}$  to  $2 \frac{3}{4}$  in head,  $13 \frac{1}{2}$  to 20 to caudal base; head  $5 \frac{1}{4}$  to  $7 \frac{5}{6}$ ,  $2 \frac{1}{6}$  to  $2 \frac{4}{5}$  to vent, width  $2 \frac{3}{5}$  to  $2 \frac{3}{4}$  in its length; combined head and trunk  $1 \frac{2}{5}$  to  $1 \frac{2}{3}$  in tail to caudal base. Snout 4 to  $4 \frac{1}{5}$  in head; eye  $5 \frac{1}{2}$  to  $8 \frac{1}{3}$ ,  $1 \frac{1}{3}$  to 2 in snout, 1 to  $1 \frac{1}{5}$  in interorbital; mouth cleft reaches  $\frac{3}{5}$  to  $\frac{2}{3}$  in eye, length  $2 \frac{2}{3}$  to 3 in head; jaws equal; teeth fine, uniserial along sides of jaws, patch on premaxillaries and form as narrow triangular patch of short though more robust ones on head of vomer; interorbital 6 to  $6 \frac{1}{2}$ , nearly level. Gill opening  $6 \frac{1}{5}$  to 8, mostly below pectoral base.

Lateral line very distinct, complete.

Dorsal origin  $\frac{1}{4}$  to  $\frac{2}{3}$  pectoral length posterior to depressed pectoral fin tips, fin height 7 in head; anal little lower; caudal  $5 \frac{3}{4}$  to 13 in head; pectoral  $2 \frac{7}{8}$  to  $3 \frac{4}{5}$ .

Light brown or brown, little paler on under surfaces of head, less so on belly. Iris silvery or whitish. Fins pale brownish. Vertical fins dusky to nearly blackish marginally and largely posteriorly. In young vertical fins dusky basally posteriorly so almost blackish at caudal base, margins whitish all around. Pectoral pale.

East Indies, Philippines, Japan, New South Wales, Victoria, Tasmania, New Zealand, Hawaii.

22984. Cebu market. March 22, 1909. Length 231 mm.

7991. D. 5367. Malabringo Light, N. 81° E., 8 miles (N. 13° 34' 37" E. 121° 7' 30"), Verde Island Passage. In 180 fathoms. February 22, 1909. Length 843 mm.

D. 5561. Teomabal Island (NW.), D. 36° W., 0.2 miles (N. 5° 50' 45" E. 121° 1' 15"), Jolo Island and vicinity. In 10 fathoms. September 18, 1909. Length 55 mm. Dorsal origin about hind end of depressed pectoral.



Leptocephalus cinereus (Rüppell)

- Conger cinereus RÜPPELL, Atlas Reise nordl. Afrika, Fische, 1828, p. 115, pl. 20, fig. 1. Red Sea. -- KLUNZINGER, Verh. zool. botan. Gessell. Wien, vol. 21, 1871, p. 607 (Red Sea). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 43 (Ternate; Nusa Laut). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 258, figs. 107 (head) 108 (dentition) (Pulu Serbete; Nusa Laut; Ternate; Humboldt Bay, New Guinea). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, 1925, p. 188 (Natal coast). -- JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 193 (type of Leptocephalus riukiuanus; Samoa). -- DERANIYAGALA, Ceylon Administrat. Rep., 1926, p. F18 (Gable Bay). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 37 (Honolulu, Samoa, Christmas, Society Islands); vol. 11, No. 5, 1931, p. 316 (references); Hong Kong Naturalist, vol. 3, No. 1, March 1932, p. 51, fig. 2 (Polynesia, Hawaii).
- Leptocephalus cinereus HERRE, Philippine Journ. Sci., vol. 23, No. 2, 1923, p. 142 (Jolo, Dumaguete).

Conger marginatus (VALENCIENNES) EYDOUX and SOULEYET, Voy.

Bonite, Zool., vol. 1, 1841, p. 201, pl. 9, fig. 1.

Hawaiian Islands. -- KAUP, Archiv Naturg. 1856, pt. 1, p. 72 (reference); Cat. Apodal Fish Brit. Mus., 1856, p. 134 (compiled). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 38 (Zanzibar; type of Conger noordzicki). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 5, 1874, p. 37 (Kandavu). -- MARTENS, Preuss. Exp., Ost-Asien, vol. 1, 1876, p. 405 (Atapapu, Timor; Larentuka, Flores). -- ALLEYNE and MACLEAY, Proc. Linn. Soc. New South Wales, vol. 1, 1876, p. 351 (Low Island Reef). -- PETERS, Monatsb. Akad. Wiss, Berlin, 1876, p. 445 (Mauritius). -- JOUAN, Mem. Soc. Sci. Cherbourg, vol. 21, 1877-78, p. 333 (New Caledonia). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 7, 1879, p. 59 (Kandavu). -- GÜNTHER, Rep. Voy Challenger, vol. 1, 1880, p. 61 (Honolulu), p. 73 (Inland Sea). -- MACLEAY, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 278 (Hood Bay, New Guinea). -- POHL, Cat. Mus. Godeffroy, No. 9, 1884, p. 40 (Kandavu). -- ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 7. -- STEINDACHNER, Denks. Akad. Wiss. Wien, Math.-naturw. Klasse, vol. 70, 1901, p. 514 (Laysan). -- GÜNTHER, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 393 (Hawaiian Islands). -- FOWLER, Copeia, No. 112, Nov. 20, 1922, p. 82 (Hawaii).

Leptocephalus marginatus (KNER) SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 27. South Seas (no description). -- JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 76 (Hilo, Kailua, Samoa). -- JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 193 (Samoa). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 9 (Christmas Island, Polynesia; Hawaii).

Conger altipinnis KAUP, Archiv Naturg., 1856, pt. 1, p. 72. Bourbon (Paris Museum); Cat. Apodal Fish Brit. Mus., 1856, p. 114 (copied). -- GUICHENOT, Notes Ile Reunion, vol. 2, 1862, p. 30.

Conger noordziekii BLEEKER, Act. Soc. Sci. Ind. Neerland., No. 7, vol. 2, 1857, p. (8) 86. Amboina; Prigi, south east Java; Atlas Ichth. Ind. Neerland., vol. 4, 1864, p. 26, pl. (23) 167, fig. 2 (Java, Sumatra, Celebes, Ternate, Amboina, Timor).

Conger nordziekii SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 29 (Kandavu).

Conger vulgaris (not CUVIER) BLEEKER, Atlas Ichth. Ind. Neerland., vol. 4, 1864, p. 26, pl. (5) 169, fig. 2 (Java, Celebes, Lette); Nederland. Tijds. Dierk., vol. 4, 1874, p. 115 (Chinese drawing). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 6, 1877, p. 18 (Sydney). -- PETERS, Monatsb. Akad. Wiss. Berlin, 1880, p. 926 (Ningpo). -- ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 7.



Leptocephalus bimaculatus SCHMELTZ, Cat. Mus. Godeffroy, No. 7,  
1879, p. 61 (South Sea). -- POHL, Cat. Mus. Godeffroy, No. 9,  
1884, p. 40 (South Sea).

?Conger multident (Not CASTELNAU) POHL, Cat. Mus. Godeffroy, No.  
9, 1844, p. 40 (Viti Levu). -- WHITLEY, Journ. Pan Pacific  
Res. Inst., vol. 2, No. 1, Jan. March 1927, p. 4 (on POHL).

Leptocephalus riukiuanus JORDAN and SNYDER, Proc. U. S. Nat.  
Mus., vol. 1901, p. 852, fig. 4. Yaeyama, Ishigaki Islands.  
-- IZUUKA and MATSUURA, Cat. Zool. Spec. Tokyo Mus., Vertebr.,  
1920, p. 173 (Okinawa).

Congrellus riukiuanus FRANZ, Abh. Kōh. Bayer. Akad. Wiss., vol.  
4, Suppl. band 1, 1910, p. 12 (Yokohama).

Conger orbignyanus (not VALENCIENNES) FOWLER, Mem. Bishop Mus.,  
vol. 11, No. 5, 1931, p. 316 (on POHL).



Depth  $2 \frac{3}{5}$  in head, 19 to caudal base; head  $7 \frac{1}{2}$ ,  $2 \frac{7}{8}$  to vent, width  $2 \frac{2}{5}$  in its length; combined head and trunk  $1 \frac{3}{4}$  in tail to caudal base. Snout  $3 \frac{7}{8}$  in head; eye  $8 \frac{1}{2}$ ,  $2 \frac{1}{4}$  in snout,  $1 \frac{1}{4}$  in interorbital; mouth cleft reaches hind eye edge, length  $2 \frac{3}{4}$  in head, lower jaw slightly shorter; interorbital 7 in head, nearly level. Gill opening 7, before and below pectoral.

Lateral line distinct, complete.

Dorsal origin over middle of pectoral, fin height 6 in head; anal fin little lower; caudal  $3 \frac{2}{5}$ ; pectoral 3.

Dark brown, belly and under surfaces paler brown. Iris pale or straw brown. Fins little paler than back, edges of vertical ones darker to blackish. Pectoral brown, blackish terminally.

Red Sea, Zanzibar, Natal, Mauritius, Bourbon, Ceylon, East Indies, Philippines, China, Rui Kui, Japan, Queensland, New South Wales, Lord Howe Island, Melanesia, Polynesia, Hawaii.

4872. Jolo market. February 13, 1908. Length 750 mm.

Leptocephalus myriaster (Brevoort)

Anguilla myriaster BREVOORT, Narr. U. S. Exp. Japan, Perry, 1856, p. 282, pl. 11, fig. 2. "Hakodadi".

Conger myriaster STEINDACHNER, Ann. Hofmus. Wien, vol. 11, 1896, p. 222, pl. 4, fig. 2 (Kobe, Hiogo, Nagasaki). -- FRANZ, Abh. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. band 1, 1910, p. 11 (Aburatsubo; Sagami Bay).

Leptocephalus myriaster JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 347 (Tokyo); p. 849 (Tokyo and Hiroshima). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 9 (Hiroshima and Tokyo). -- SNYDER, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 406 (Hakodate; Tokyo; Shio-gama). -- JORDAN and METZ, Mem. Carnegie Mus., vol. 6, No. 1, 1913, p. 25 (Fusan). -- IZUUKA and MATSUURA, Cat. Zool. Spec. Mus. Tokyo, Vertebr., 1920, p. 170 (Tokyo).

Astroconger myriaster JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 195 (Misaki, Fukuoka, Mikawa Bay, Tokyo, Yokohama, Osaka, Fukui).

Conger vulgaris (not ) ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 7.

Leptocephalus flavirostris Snyder

Leptocephalus flavirostris SNYDER, Proc. U. S. Nat. Mus.,  
vol. 35, 1908, p. 93. Misaki; vol. 42, 1912, p. 405, pl.  
51, fig. 1 (Misaki).

Alloconger flavirostris JORDAN and HUBBS, Mem. Carnegie Mus.,  
vol. 10, No. 2, June 27, 1925, p. 195 (paratype).

Leptocephalus nystromi Jordan and Snyder

Leptocephalus nystromi JORDAN and SNYDER, Proc. U. S. Nat.

Mus., vol. 23, 1901, p. 853, fig. 5. Nagasaki. -- JORDAN and FOWLER, Proc. U. S. Nat. Mus., vol. 25, 1902, p. 417 (Morioka). -- SNYDER, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 406 (Tokyo, Kagoshima). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 9 (Nagasaki).

Conger nystromi FRANZ, Abh. K. Bayer. Akad. Wiss., vol. 4,

Suppl. band 1, 1910, p. 11 (Sagami Bay).

Rhynchocymba nystromi JORDAN and HUBBS, Mem. Carnegie Mus.,

vol. 10, No. 2, June 27, 1925, p. 195 (types).

Conger marginatus (not VALENCIENNES) GÜNTHER, Rep. Voy.

Challenger, vol. 1, pt. 6, 1880, p. 73 (Inland Sea of Japan).

Conger cinereus (not RÜPPELL) WEBER and BEAUFORT, Fishes Indo

Austral. Archipelago, vol. 3, 1916, p. 258 (part, on

Leptocephalus nystromi).



Leptocephalus ectenurus Jordan and Richardson

Leptocephalus ectenurus JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 4, No. 4, Aug. 28, 1911, p. 171, pl. 66 (lower figure). Takao.

Rhynchoconger ectenurus JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 196 (type of Leptocephalus ectenurus). -- CHEN, Bull. Biol. Dep. Sun Yat-Sen Univ., vol. 1, No. 1, 1929, p. 12, fig. 5 (profile and dentition) (Foochow).

Conger ectenurus FOWLER, Hong Kong Naturalist, vol. 3, No. 1, March 1932, p. 52 (compiled).

Larval LEPTOCEPHALI

Leptocephalus acuticaudatus Kaup

Leptocephalus acuticaudatus KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 15, pl. 18, fig. 16. Malabar. -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 64 (reference).

Leptocephalus altus Richardson

Leptocephalus altus RICHARDSON, Ichth. Voy. Erebus and Terror, 1844-48, p. 51, pl. 30, figs. 8-10. No locality.

Leptocephalus australis (Castelnau)

Conger australis CASTELNAU, Proc. Linn. Soc. New South Wales,  
vol. , 1879, p. 396. New South Wales.

Leptocephalus brevicaudus Peters

Leptocephalus (Diaphanichthys) brevicaudus PETERS, Monatsb.  
Akad. Wiss. Berlin, 1864, p. 399. Between Maybata and  
Luzon.

Leptocephalus brevicaudus BLEEKER, Atlas Ichth. Ind. Néerland.,  
vol. 4, 1864, p. 123 (compiled). -- GÜNTHER, Cat. Fishes  
Brit. Mus., vol. 8, 1870, p. 142 (compiled). -- WEBER,  
Siboga Exp., vol. 57, Fische, 1913, p. 65 (reference).

Leptocephalus ceramensis Bleeker

Leptocephalus ceramensis BLEEKER, Atlas Ichth. Ind. Néerland.,  
vol. 4, 1864, p. 123, pl. (49) 193, fig. 3. Waihai, Ceram.  
-- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 143  
(type; old collection). -- WEBER and BEAUFORT, Fishes Indo  
Austral. Archipelago, vol. 3, 1916, p. 408 (compiled).

Leptocephalus dentex Cantor

- Leptocephalus dentex CANTOR, Journ. Asiatic Soc. Bengal, vol. 18, pt. 2, 1849, p. 1316. Pinang (in Johnius diacanthus). -- BLEEKER, Atlas Ichth. Ind. Neerland., vol. 4, 1864, p. 122 (compiled). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 142 (Zanzibar; type of Leptocephalichthys taenioides; S. 31 E. 45). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 64 (reference). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 408 (reference).
- Leptocephalichthys taenia (not LESSON) BLEEKER, Naturk. Tijds. Nederland. Indië, vol. 8, 1855, p. (393) 428. Amboina.
- Leptocephalichthys taenioides BLEEKER, Act. Soc. Sci. Ind. Neerland., (Enumerat.), vol. , 185 , p. 180. Amboina.
- Leptocephalus taenioides BLEEKER, Atlas Ichth. Ind. Neerland., vol. 4, 1864, p. 123, pl. (48) 192, fig. 4 (type). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 66 (Ambon). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 408 (reference).

Leptocephalus dussumieri Kaup

Leptocephalus dussumieri KAUP, Cat. Apodal Fishes Brit. Mus., 1856, p. 151, pl. 19, fig. 17. Malabar. -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 144 (reference). -- PETERS, Monatsb. Akad. Wiss. Berlin, 1876, (1877), p. 851 (Pacific Ocean). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 64 (note). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 39 (compiled).

Leptocephalus hjorti Weber

Leptocephalus hjorti WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 71, figs. 16-17, p. 78. S. 5°26' E. 121°18', 1944 meters. -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 402, figs. 202-203 (type).



Leptocephalus hypselosoma (Bleeker)

Leptocephalichthys hypselosoma BLEEKER, Act. Soc. Sci. Ind.

Neerland., No. 3, vol. 1, 1856, p. (6) 69. Manado,  
Celebes. -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870,  
p. 140 (type).

Leptocephalus hypselosoma BLEEKER, Atlas Ichth. Ind. Neerland.,

vol. 4, 1864, p. 124, pl. (37) 181, fig. 5 (type). --  
WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 66 (note). --  
WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol.  
3, 1913, p. 408 (Manado example).

Leptocephalus javanicus Strömman

Leptocephalus javanicus STROMMAN, Leptoceph. Univ. Zool. Mus.

Upsala, 1896, p. 30, pl. 3, fig. 13, Bali Straits. --  
WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 67 (reference).  
-- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago,  
vol. 3, 1916, p. 409 (copied).

Leptocephalus malabraicus Day

Leptocephalus malabaricus DAY, Proc. Zool. Soc. London, 1865,  
p. 308, ; Fishes of Malabar, 1865, p. 252. -- WEBER,  
Siboga Exp., vol. 57, Fische, 1913, p. 65 (reference).

Leptocephalus mirabilis Brauer

Leptocephalus mirabilis BRAUER, Deutsch. Tiefsee Exp. Vald-  
ivia, vol. 15, Tiefsee Fische, 1906, p. 125. East of  
Zanzibar. -- WEBER, Siboga Exp., vol. 57, Fische, 1913,  
p. 76, figs. 25-26 (Banda Sea, 2477 meters). -- WEBER and  
BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916,  
p. 406, figs. 208-209 (type).

Leptocephalus morrissii Gmelin

Leptocephalus morrissi GMELIN, Syst. Nat. Linn., vol. 1, 1789, p. 1150. Sea near Holyhead, England. -- SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 133 (on GMELIN). -- CLOQUET, Dict. Sci. Nat., vol. 20, 1821, p. 244 (reference). -- BONAPARTE, Cat. Method. Pesc. Europ., 1846, p. 40 (Atlantic, Britian). -- BLEEKER, Naturk. Tijds. Nederland. Indië, vol. 21, 1860, p. 56 (name only). -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 139 (Polperro; Bridgewater; Madeira; Southern Europe; Messina; Nice; Australia).

Leptocephalus morrissi KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 147 (compiled).

Leptocephalus morrisianus LACEPÈDE, Hist. Nat. Poiss., vol. 2, 1800, pp. 142, 143, pl. 3 fig. 2 (Holyhead).

Ophidium pellucidum COUCH, Mag. Nat. Hist. London, vol. 5, 18, , pp. 313, 742.

Leptocephalus pellucidus BONAPARTE, Cat. Method. Pesc. Europ., 1846, p. 40 (Mediterranean).

Leptocephalus spаланzani (not PISSO 1810) Hist. Nat. Eur. Merid., vol. 3, 1826, p. 205 ( ). -- KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 147 (copied).

Leptocephalus gussoni COCCO, Isis, 1831, p. 1340.

Leptocephalus candidissimus COSTA, Fauna Napoli, Pesc., 1841, pl. 100.

Helmichthys diaphanus COSTA, Fauna Napoli, Pesc., 1841, pl. 31.

Leptocephalus diaphanus KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 148, pl. 17, fig. 9 (Paris Museum; Messina).

Leptocephalus punctatus KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 148, pl. 17, fig. 8. Nice.

Lepidopus pallidus (SAVIGNY) KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 148 (name in text; based on same type as Leptocephalus punctatus).

Leptocephalus kollikeri KAUP, Cat. Apodal Fish Brit. Mus., 1856, 148, pl. 17, fig. 10. Messina.

Leptocephalus gegenbauri KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 149, pl. 17, fig. 11. Messina.

Leptocephalus bebroni KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 149, pl. 17, fig. 12. No locality (Messina).

Leptocephalus multimaculatus Steindachner

Leptocephalus multimaculatus STEINDACHNER, Sitz. Ber. Akad. Wiss. Wien, Math.-naturw. Klasse, vol. 60, pt. 1, 1869, (1870), p. 316. Peru coast. -- SCHMELTZ, Cat. Mus. Godeffroy, No. 3, 1874, p. 38 (South Sea); No. 7, 1879, p. 61 (South Sea). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 40 (compiled); vol. 11, No. 5, 1931, p. 316 (reference).



Leptocephalus nuttalli (Fowler)

Atopichthys nuttalli FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 11, fig. 2. Hawaiian Islands; Copeia, No. 112, Nov. 20, 1922, p. 82 (Hawaii).

Leptocephalus nuttalli FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 39, fig. 8 (type).

Leptocephalus oculus (Peters)

Helmichthys oculus PETERS, Monatsb. Akad. Wiss. Berlin, 1866, p. 525, fig. 4. Amboyna. -- GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 140 (Madagascar). -- MARTENS, Preuss. Exp. Ost-Asien, vol. 1, 1876, p. 405 (Amboina River). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 65 (note). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 408 (note).

Leptocephalus oculus BLEEKER, Rech. Faune Madagascar, pt. 4, 1874, p. 73 (reference).

Leptocephalus subinornatus Strömman

Leptocephalus subinornatus STRÖMMAN, Leptoceph. Univ. Zool.

Mus. Upsala, 1896, p. 36, pl. 4, figs. 1-2. East Coast  
South Africa N. 29 20' E. 58 40'. -- WEBER, Siboga Exp.,  
57, Fische, 1913, p. 67 (note).

Leptocephalus taenia Quoy and Gaimard

*Leptocephalus taenia* (CUVIER) QUOY and GAIMARD, Voy. Uranie, Zool., 1824, p. 248. New Guinea. -- LESSON, Voy. Coquille, Zool., vol. 2, pt. 1, 1830, p. 126 (New Guinea). -- KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 151, pl. 19, fig. 18 (Mariannes). -- BLEEKER, Naturk. Tijds. Nederland. Indië, vol. 21, 1860, p. 56 (reference); Atlas Ichth. Ind. Neerland., vol. 4, 1864, p. 122, pl. (48) 92, fig. 2 (compiled). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 27 (South Seas). -- GUNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 143 (Zanzibar, South Atlantic, S. 31 W. 45). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 7, 1879, p. 60 (South Sea). -- POHL, Cat. Mus. Godeffroy, No. 9, 1884, p. 40 (South Sea). -- GUNTHER, Rep. Voy. Challenger, vol. 31, pt. 2, 1888 (1889), p. 42 (Admiralty Islands). -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 67 (note), p. 78 (Flores Sea, Borneo Bank, Ceram Sea, Lucipara Islands, Bands Sea). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 404, figs. 204-206 (Sailus Ketjil, Paternoster Islands; Borneo Bank; Ceram Sea; Lucipara; Banda Sea). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 39 (compiled); vol. 11, No. 5, 1931, p. 316 (reference).

Leptocephalus marginatus (QUOY and GAIMARD) KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 152, pl. , fig. 19. Pondicherry.

Leptocephalus lineo-punctatus KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 152, pl. , fig. 20. No locality.

Leptocephalus scheeli STROMMAN, Leptoceph. Univ. Zool. Mus. Upsala, 1896, p. 21. Malayan Archipelago, Atlantic. -- WEBER, Siboga Exp., vol. 57, Fische, 1913, p. 66 (note).

Genus Congermuraena Kaup

Congermuraena KAUP, Cat. Apodal Fish Brit. Mus., 1856, p. 108. Type Congrus habenatus RICHARDSON, designated virtually by OGILBY, Proc. Linn. Soc. New South Wales, vol. 23, pt. 3, August 31, 1898, p. 285.

Congromuraena GUNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 40. Type Congrus habenatus RICHARDSON.

Gnathophis KAUP, Abh. Nat. Verein Hamburg, vol. 4, pt. 2, 1859, (1860), p. 7. Type Myrophis heterognathus BLEEKER, monotypic.



Congriscus JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10,  
No. 2, June 27, 1925, p. (191) 193. Type Congromuraena  
megastoma SCHLEGEL, orthotypic.

Head moderate, much shorter than trunk. Eyes large. Teeth mostly granular, outer series in jaws acute. Vomerine teeth well developed. Dorsal begins behind pectoral bases. Pectorals well developed. Vent well before middle in length.

The following doubtful species imperfect described:

Congermuraena neoguianicus (Bleeker)

Conger neoguianicus BLEEKER, Act. Soc. Sci. Ind. Neerland.,  
vol. 6, No. 2, 1859, p. (5) 22. Dorey, New Guinea. --

FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 39 (copied).

Conger neoguinaicus GUNTHER, Cat. Fishes Brit. Mus., vol. 8,  
1870, p. 43 (note).

Ophisoma neoguinaicum BLEEKER, Atlas Ichth. Ind. Neerland.,  
vol. 4, 1864, p. 28 (copied).

Congermuraena neoguinaica OGILBY, Proc. Linn. Soc. New South  
Wales, vol. 23, pt. 3, August 31, 1898, p. 286 (note).

Congrellus neoguinaicus WEBER and BEAUFORT, Fishes Indo  
Austral. Archipelago, vol. 3, 1916, p. 263 (note on  
BLEEKER'S specimen).

Analysis of species

- a<sup>1</sup>. Congermuraena. Tip of caudal black or brown, not narrowly white.
- b<sup>1</sup>. Vertical fins without dark margins; eye  $5 \frac{1}{2}$  in head,  $1 \frac{1}{2}$  in snout. albescens.
- b<sup>2</sup>. Vertical fins with dark edging.
- c<sup>1</sup>. Head and trunk  $1 \frac{1}{2}$  or less in tail.
- d<sup>1</sup>. Eye  $4 \frac{1}{2}$  to 5 in head, rarely equals snout. australis.
- d<sup>2</sup>. Eye 6,  $1 \frac{4}{5}$  in snout. habenata.
- c<sup>2</sup>. Head and trunk  $1 \frac{3}{4}$  in tail. heterognatha.
- a<sup>2</sup>. Congriscus. Tail, including dorsal and anal, posteriorly blackish, tip of caudal narrowly white, eye  $4 \frac{1}{2}$  in head,  $1 \frac{3}{4}$  in snout. megastoma.

Congermuraena albescens Barnard

Congermuraena albescens BARNARD, Ann. South African Mus.,  
vol. 13, pt. 8, 1923, p. 442. Off Cape Point, 200  
fathoms; vol. 21, pt. 1, June 1925, p. 189, pl. 1, fig.  
1, (type).

Congermuraena australis Barnard

Congermuraena australis BARNARD, Ann. South African Mus.,  
vol. 13, pt. 8, 1923, p. 442. ;  
vol. 21, pt. 1, June 1925, p. 190 (west coast South  
Africa, off Cape Peninsula, False Bay, Tristan d' Acunha,  
2 to 60 fathoms).

?Leptocephalus capensis (LALANDE) KAUP, Cat. Apodal Fish  
Brit. Mus., 1856, p. 153. Cape of Good Hope.

Congermuraena habenata (Richardson)

Congrus habenatus RICHARDSON, Ichth. Voy. Erebus and Terror, 1844-48, p. 109, pl. 50, figs. 1-5. Cook's Straits, New Zealand.

Congermuraena habenata KAUP, Archiv Naturg., 1856, pt. 1, p. 71 (reference); Cat. Apodal Fish Brit. Mus., 1856, p. 108, pl. 14, fig. 72 (head and dentition) (copied). -- OBILBY, Proc. Linn. Soc. New South Wales, vol. 23, pt. 3, Aug. 31, 1898, p. 285 (reference). -- MC CULLOCH, Fishes New South Wales, ed. 2, 1927, p. 23, pl. 8, fig. 80a.

Congromuraena habenata CASTELNAU, Proc. Zool. Acclim. Soc. Victoria, vol. 1, 1871, p. 194 (Melbourne market); Record London Internat. Exhib., 1873, p. 16 (Victoria).  
Congromuraena habentata HECTOR, Handbook New Zealand, 1879, p. 16 (error).

Ophisoma habenatus KNER, Reise Novara, Fische, 1865, p. 374, (St. Paul Island).

Ophisoma habentum KNER, Reise Novara, Fische, 1865, pl. 13, fig. 2.

Congromuraena longicauda RAMSAY and OGILBY, Proc. Linn. Soc. New South Wales, ser. 2, vol. 2, March 12, 1888, p. 1022. Paramatta River, New South Wales.



Congermuraena longicauda OGILBY, Proc. Linn. Soc. New South Wales, vol. 23, pt. 3, Aug. 31, 1898, p. 285 (New South Wales).

Congermuraena sancti pauli OGILBY, Proc. Linn. Soc. New South Wales, vol. 23, pt. 3, Aug. 31, 1898, p. 285 (name on KNER).

Congermuraena heterognatha (Bleeker)

Myrophis heterognathos BLEEKER, Act. Soc. Sci. Ind. Néerland., No. 9, vol. 5, 1858-59, p. (2) 9, pl. 1, fig. 3, pl. 3, fig. 1. Nagasaki; Atlas Ichth. Ind. Néerland., vol. 4, 1864, p. 28 (note).

Myrophis heterognathus GÜNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 43 (type).

Gnathophis heterognathus KAUP, Abh. Nat. Verein Hamburg, vol. 4, pt. 2, 1859 (1860), p. 7 (on BLEEKER).

Congermuraena heterognatha OGILBY, Proc. Linn. Soc. New South Wales, vol. 23, pt. 3, August 31, 1898, p. 286 (reference).

Leptocephalus heterognathus JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 851 (compiled). -- JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 4, No. 4, August 28, 1909, p. 172 (reference).

Congermuraena megastoma Günther

Congromuraena megastoma GÜNTHER, Rep. Voy. Challenger, vol.

1, pt. 6, 1880, p. 73. Off Enosima.

Congrellus megastomus OGILBY, Proc. Linn. Soc. New South

Wales, vol. 28, pt. 3, August 31, 1898, p. 291 (reference).

-- FRANZ, Abh. Bayer. Akad. Wiss., vol. 4, Suppl. band 1,  
1910, p. 12 (Aburatsubo).

Leptocephalus megastomus SNYDER, Proc. U. S. Nat. Mus., vol.

42, 1912, p. 405 (Yokohama). -- IZUUKA and MATSUURA, Cat.

Zool. Spec. Tokyo Mus., Vertebr., 1920, p. 173 (Yaeyama-  
jima).

Congriscus megastomus JORDAN and HUBBS, Mem. Carnegie Mus.,

vol. 10, No. 2, June 27, 1925, p. 193 (reference).

Genus Ariosoma Swainson

Ariosoma SWAINSON, Nat. Hist. Animals, vol. 1, 1838, p. 220.

Atypic. Type Muraena balearica DE LA ROCHE, affixed by  
JORDAN, Genera of Fishes, pt. 2, 1919, pp. 193, 198.

Ophisoma SWAINSON, Nat. Hist. Animals, vol. 2, 1839, p. 334.

Type Ophisoma acuta SWAINSON, designated by BLEEKER, Atlas  
Ichth. Ind. Neerland., vol. 4, 1864, p. 20. (Versus  
Ophisomus SWAINSON, Nat. Hist. Animals, vol. 2, 1839, p.  
277, type Ophisomus obtusa SWAINSON, wrongly designated by  
SWAIN, Proc. Acad. Nat. Sci. Philadelphia, 1883, p. ).

Congrellus OGILBY, Proc. Linn. Soc. New South Wales, vol. 28,  
pt. 3, Aug. 31, 1898, p. 286. Type Muraena balearica  
DE LA ROCHE, orthotypic.

Anago JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2,  
June 27, 1925, p. (191) 193. Type Conger anago SCHLEGEL,  
orthotypic.

Congrina JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No.  
2, June 27, 1925, p. 196. Type Congromuraena aequorea  
GILBERT and CRAMER, orthotypic.

Head small, much shorter than trunk. Eyes large. Mouth cleft not or quite reaches opposite eye center. Teeth acicular, upper not extended conspicuously forward beyond mandible. Vomerine teeth well developed. Dorsal begins above or nearly over pectoral bases. Pectorals well developed. Vent usually but little advanced from middle.



Analysis of species

a<sup>1</sup>. Vertical fins without black border.

b<sup>1</sup>. Body uniformly pale. obud.

b<sup>2</sup>. Series of small black spots or dots along,  
above and below lateral line.

guttulata.

b<sup>3</sup>. Tail blackish terminally, though greater  
part of dorsal and anal pale like body.

retroincta.

a<sup>2</sup>. Vertical fins with dark or black border all  
around.

c<sup>1</sup>. Dorsal origin over gill opening.

bowersi.

c<sup>2</sup>. Dorsal origin over pectoral origin.

anago.

c<sup>3</sup>. Dorsal origin opposite first 2/5 or 4/5  
of depressed pectoral.

brachyrhynchus.

Ariosoma obud Herre

Ariosoma obud HERRE, Philippine Journ. Sci., vol. 23, No.

2, August 1923, p. 144, pl. 1, fig. 2. Marinduque Island.

Depth  $2 \frac{7}{8}$  to 3 in head,  $15 \frac{1}{3}$  to 16 to caudal base; head  $5 \frac{1}{3}$  to  $5 \frac{2}{3}$ ,  $2 \frac{2}{5}$  to  $2 \frac{1}{2}$  to vent; width  $3 \frac{1}{2}$  to  $3 \frac{3}{4}$  in its length; combined head and trunk  $1 \frac{1}{8}$  to  $1 \frac{2}{7}$  in tail to caudal base. Snout 4 to  $4 \frac{1}{3}$  in head; eye  $4 \frac{1}{3}$  to 5, 1 to  $\frac{1}{8}$  in snout,  $\frac{1}{3}$  more to twice interorbital; mouth cleft reaches  $\frac{1}{5}$  in eye, length  $3 \frac{1}{4}$  to  $3 \frac{3}{5}$  in head, upper jaw but slightly protruded, none of teeth exposed on premaxillaries with closed jaws; teeth fine, minute, in narrow bands in jaws and short extension on vomer; interorbital  $6 \frac{1}{3}$  to  $8 \frac{2}{3}$  in head, low. Gill opening 7 to  $9 \frac{4}{5}$ , below middle of pectoral base.

Lateral line axial, distinct, complete.

Dorsal origin begins over first  $\frac{1}{4}$  to  $\frac{2}{5}$  of depressed pectoral, fin height 3 to  $4 \frac{3}{4}$  in head; anal fin height  $4 \frac{1}{4}$  to  $5 \frac{1}{5}$ , caudal length  $8 \frac{3}{4}$  to  $9 \frac{1}{2}$ ; pectoral  $2 \frac{2}{3}$  to 3.

Brown, under surface of head and belly whitish. Iris gray.  
Fins all pale brown, uniform.

Philippines.

21779 and 21780. Cebu market. March 20, 1909. Length 80 to 203 mm. 5 examples.

6464 and 6465. Cebu market. August 13, 1909. Length 150 to 154 mm.

21658, 21660 to 21662, 21752. Cebu market. August 28, 1909. Length 120 to 168 mm.

5364. Oton market, Iliolo. March 30, 1908. Length 69 mm.

Ariosoma guttulata (Günther)

Congromuraena guttulata GUNTHER, Rep. Voy. Challenger, vol.

22, 1887, p. 252. S. 19 9' E. 179 41' 50", off Matuku, Fiji, 315 fathoms. -- GOODE and BEAN, Oceanic Ichth., 1895, p. 138 (reference). -- ALCOCK, Cat. Deep Sea Fishes Indian Mus., 1899, p. 199 (off Malabar coast, 636 fathoms). -- GÜNTHER, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 394 (type).

Congrellus guttulatus OGILBY, Proc. Linn. Soc. New South Wales,

vol. 28, pt. 3, August 31, 1898, p. 292 (note). -- JORDAN and SEALE, Bull. Bur. Fisher., vol. 25, 1905, (1906), p. 193 (Apia).

Conger guttulatus FOWLER, Mem. Bishop Mus., vol. 10, 1928, p.

39 (Samoa).

Ariosoma retrotincta (Jordan and Snyder)

Leptocephalus retrotinctus JORDAN and SNYDER, Proc. U. S. Nat.

Mus., vol. 23, 1901, p. 853, fig. 6. Tokyo, Japan.

Conger retrotinctus FRANZ, Abh. Kon. Bayer. Akad. Wiss., vol.

4, Suppl. band 1, 1910, p. 12 (Dzusha!).

Congrina retrotincta JORDAN and HUBBS, Mem. Carnegie Mus.,

vol. 10, No. 2, June 27, 1925, p. 197 (Misaki).



Ariosoma bowersi (Jenkins)

Congrellus bowersi JENKINS, Bull. U. S. Fish Comm., vol. 22, 1902, (1903), p. 422, fig. 1. Honolulu. -- SNYDER, Bull. U. S. Fish Comm., vol. 22, 1902, (1904), p. 515 (Honolulu). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., vol. 23, pt. 1, 1903, ((1905), p. 77, fig. 16 (Hilo; Honolulu). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 11 (Honolulu).

Congromuraena bowersii GÜNTHER, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 394 (south of Gilbert Islands).

Congermuraena bowersii FOWLER, Copeia, No. 112, Nov. 20, 1922, p. 82 (Hawaii).

Ariosoma bowersi FOWLER, Bull. Bishop Mus., No. 22, 1925, p. 23 (Honolulu).

Alloconger bowersi JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 195 (Hawaiian Islands).

Conger bowersi FOWLER, Bull. Bishop Mus., No. 38, 1927, p. 5 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 39, pl. 1D (Honolulu; type).

Ariosoma anago (Schlegel)

Conger anago SCHLEGEL, Fauna Japonica, Poiss., pts. 10-14, 1846, p. 259. Nagasaki Bay. -- BLEEKER, Varh. Batav. Genootsch. (Nal. Ich. Japan), vol. 25, 1853, p. (19) 52 (Nagasaki); (Nal. Ich. Japan), vol. 26, 1857, p. 6 (Nagasaki); Act. Soc. Sci. Ind. Neerland., No. 3, vol. 3, 1857-58, p. 6 (Japan); Naturk. Tijds. Nederland. Indië, vol. 20, 1859-60, p. 235 (Nagasaki). -- FRANZ, Abh. Kofl. Bayer. Akad. Wiss., vol. 4, Suppl. band 1, 1910, p. 12 (Yokohama; Aburatsubo). -- FOWLER and BEAN, Proc. U. S. Nat. Mus., vol. 62, 1922, p. 9 (Takao; Cebu). -- FOWLER, Hong Kong Naturalist, vol. 2, No. 4, Nov. 1931, p. 287 (Hong Kong); vol. 3, No. 1, March 1932, p. 52 (Philippines, Formosa, Japan).

Congromuraena anago GUNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 42 (Japan; Amboina; type of Conger anagoides). -- DAY, Fishes of India, pt. 4, 1878, p. 660, pl. 169, fig. 2. -- GUNTHER, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 73 (Yokohama). -- KAROLI, Termesz. Fuzetek, Budapest, vol. 5, 1881, p. 185 (Nagasaki, Kobe, Yokohama). -- DAY, Fauna Brit. India, vol. 1, 1889, p. 88, fig. 36. -- ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 6.

Congromuraena anago MARTENS, Preuss. Exp. Ost-Asien, vol. 1, 1876, p. 405 (Yeddo; Amboina River; error).

Congeruraena anago BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 190 (Natal coast, 22 fathoms).

Congrellus anago OGILBY, Proc. Linn. Soc. New South Wales, vol. 28, pt. 3, August 31, 1898, p. 290 (reference). -- JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 855, fig. 8 (front of body) (Tokyo, Misaki, Kobe, Wakanoura, Nagasaki). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1912, p. 11 (Tokyo; paratype of Congrellus meeki). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 262, fig. 109, text fig. 111 (dentition) (Pulu Weh near Sumatra; Moluccas). -- DERANIYAGALA, Ceylon Administrat. Rep., 1925, p. F15. -- SOWERBY, Naturalist in Manchuria, vols. 4-5, 1930, p. 153 (reference).

Leptocephalus anago JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 855, fig. 8 (Tokyo, Wakanoura). -- SNYDER, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 405 (Misaki; Tokyo). -- JORDAN and METZ, Mem. Carnegie Mus., vol. 6, No. 1, June 1913, p. 25 (Fusan). -- JORDAN and THOMPSON, Mem. Carnegie Mus., vol. 6, No. 4, Sept. 1914, p. 234, fig. 10 (copied) (Shimonoseki). -- IZUUKA and MATSUURA, Cat. Zool. Spec. Tokyo Mus., Vertebr., 1920, p. 173 (Tokyo).



Anago anago JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 193 (Misaki, Mikawa Bay, Toba, Tokyo). -- CHEN, Bull. Bio. Dep. Sun Yat Sen Univ., vol. 1, No. 1, 1929, p. 11, fig. 4 (dentition) (Gaalong Bay and Ling Sui, Hainan). -- ANONYMOUS, Illustrat. Jap. Aquat. Plants An., vol. 1, 1931, pl. 20, fig. 6.

Anguilla japonica (not SCHLEGEL p. 258) SCHLEGEL, Fauna Japonica, Poiss., pts. 10-14, 1846, pl. 113, fig. 1 (error in transposition).

Conger anagoides BLEEKER, Verh. Batav. Genootsch. (Muraen.), vol. 25, 1853, p. 76. Banda, Neira.

Ophisoma anagoides BLEEKER, Atlas Ichth. Ind. Néerland., vol. 4, 1864, p. 27 (Singapore, Celebes, Batjan, Amboina). -- KNER, Reise Novara, Fische, 1865, p. 375 (Java).

Congermuraena anagoides BLEEKER, Atlas, Ichth. Ind. Néerland., vol. 4, pl. (5) 149, 1864, fig. 3.

Congrellus anagoides OGILBY, Proc. Linn. Soc. New South Wales, vol. 28, pt. 3, August 31, 1898, p. 290 (reference).

Leptocephalus anagoides JORDAN and RICHARDSON, Mem. Carnegie Mus., vol. 4, No. 4, August 28, 1909, p. 171 (Takao).

Alloconger anagoides JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 195 (Takao example).

Congrellus fidjiensis OGILBY, Proc. Linn. Soc. New South Wales, vol. 23, August 31, 1898, p. 290. Fiji.

Conger fidjiensis FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 38 (compiled).



Congrellus meeki JORDAN and SNYDER, Proc. U. S. Nat. Mus.,  
vol. 23, 1900, p. 347, pl. 11. Bay of Tokyo, Japan.

Depth 10 to 14  $1/2$ ; head 5  $1/2$  to 6, width 2  $3/4$  to 2  $4/5$ ,  
length 1 to 1  $1/10$  to dorsal origin, 2  $2/3$  to 3 to anal origin.  
Snout 5  $1/3$  to 6 in head; eye 5 to 7, subequal with snout or in-  
terorbital; mouth cleft reaches hind pupil edge, length 3 to 3  
 $1/3$  in head; teeth conic, uniform, minute, in narrow bands in  
jaws and continuous patch of vomerine; interorbital 5 to 8, near-  
ly level. Gill opening long as snout.

Dorsal origin about over pectoral origin; caudal short, about  
half length of pupil; pectoral 2  $1/2$  to 3, elongate.

Largely brownish above, paler below, more or less whitish on  
lower surface of head and belly. Iris golden, with dusky ring.  
Dorsal and anal pale or whitish basally, edges broadly blackish,  
especially posteriorly. Caudal whitish. Pectoral variable pale  
or with upper and terminal portion blackish.

Natal, Ceylon, Singapore, East Indies, Philippines, China,  
Japan, Korea, Formosa, Polynesia.

2 examples. A. N. S. P. Wakanoura, Japan. Stanford University.  
Length.

1 example. A. N. S. P. Tokyo, Japan. Stanford University. Length.

Ariosoma brachyrhynchus new species

Depth 2 to  $2 \frac{1}{6}$  in head,  $10 \frac{1}{2}$  to  $12 \frac{7}{8}$  to caudal base; head  $5 \frac{1}{5}$  to 6, 2 to  $2 \frac{3}{5}$  to vent, width  $2 \frac{3}{4}$  to 3 in its length; combined head and trunk  $1 \frac{1}{3}$  to  $1 \frac{1}{2}$  in tail to caudal base. Snout 5 to  $5 \frac{7}{8}$  in head; eye  $3 \frac{2}{5}$  to 6, little greater than snout in young to subequal with age, greater than interorbital; mouth cleft reaches  $\frac{1}{2}$  to nearly opposite hind eye edge with age, length  $2 \frac{9}{10}$  to 3 in head; lower jaw very slightly protrudes so only 2 or 3 rows of premaxillary teeth exposed when mandible closes; teeth all small, simple, conic, in narrow bands in jaws and short row on head of vomer; interorbital  $4 \frac{3}{4}$  to 6, with low median ridge. Gill opening  $5 \frac{1}{8}$  to  $7 \frac{1}{4}$ , below pectoral origin.

Lateral line axial, conspicuous, complete.

Dorsal origin over first  $\frac{2}{5}$  to  $\frac{4}{5}$  of depressed pectoral, fin height  $3 \frac{2}{5}$  to  $4 \frac{2}{5}$  in head; anal fin height  $5 \frac{3}{4}$  to  $7 \frac{1}{4}$ ; caudal  $6 \frac{1}{2}$  to  $6 \frac{2}{3}$ , pointed; pectoral  $2 \frac{1}{2}$  to 3.

Brown, under surface of head whitish, trunk and tail also pale. Iris grayish. Inside mouth and gill opening pale. Fins pale brown. Vertical fins with narrow blackish border all around. Pectoral pale brown.

Diagnosis. Differs from *Ariosoma obud* in its much shorter and more obtuse muzzle.

Type No.

U. S. N. M.

1884. D. 5247. Dumalag Island (S.), S.  $78^{\circ}$ W., 3.8 miles  
(N.  $7^{\circ}21'$  E.  $125^{\circ}38'45''$ ), Gulf of Davao. In 135 fathoms.

May 18, 1908. Length 272 mm.

2838 and 2839. D. 5403. Capitancillo Island Light, S.  $46^{\circ}$   
W., 15.7 miles (N.  $11^{\circ}10'$  E.  $124^{\circ}17'15''$ ), between Leyte and  
Cebu. In 182 fathoms. March 16, 1909. Length 144 to 177 mm.

10077. D. 5291. Escarceo Light, N.  $39^{\circ}$ W., 2.20 miles (N.  $13^{\circ}$   
 $29'40''$  E.  $121^{\circ}00'45''$ ), China Sea vicinity of southern Luzon.  
In 173 fathoms. July 23, 1908. Length 303.

2 examples. Tataan Anchorage. February 21, 1908. Length 66  
to 75 mm.

4434. D. 5161. Tinakta Island (E.), N.  $12^{\circ}$ W., 1.80 miles  
(N.  $5^{\circ}10'15''$  E.  $119^{\circ}53'$ ), Sulu Archipelago, Tawi Tawi Group.  
In 16 fathoms. February 22, 1908. Length 73 mm.

5879, D. 5256. Utara Point, Bango Island, N.  $76^{\circ}$ W., 7.80  
miles (N.  $7^{\circ}21'45''$  E.  $124^{\circ}7'15''$ ), southern Mindanao, east-  
ern Illana Bay. In 158 fathoms. May 22, 1908. Length 330  
mm. Type.

Genus Bathycongrus Ogilby

Bathycongrus OGILBY, Proc. Linn. Soc. New South Wales,  
vol. 23, 1898, p. 292. Type Congromuraena nasica  
ALCOCK, orthotypic.

Hildebrandia JORDAN and EVERMANN, Proc. California Acad.  
Sci., ser. 4, vol. 16, April 27, 1927, p. 502. Type  
Congromuraena flava GOODE and BEAN.

Eyes small. Mouth cleft extends behind middle of eye.  
Teeth acicular, upper extended forwards beyond mandible.  
Vomerine teeth more or less developed. Dorsal begins over or  
nearly over pectoral bases. Pectoral fins usually short.  
Vent far before middle in length.



Analysis of species

a<sup>1</sup>. Microcephalocongrus new subgenus. Head shorter than trunk.

b<sup>1</sup>. Inside of gill opening pale.

c<sup>1</sup>. Vertical fins without black edge.

d<sup>1</sup>. Eye  $5 \frac{1}{2}$  to 7,  $1 \frac{3}{4}$  to 2 in snout. aequoreus.

d<sup>2</sup>. Eye 5,  $1 \frac{2}{5}$  in snout. megalops.

c<sup>2</sup>. Vertical fins with narrow black edge in young; eye  $5 \frac{4}{5}$ , 2 in snout. roosendaali.

b<sup>2</sup>. Inside of gill opening black; eye  $4 \frac{7}{8}$  to 6,  $1 \frac{2}{3}$  to  $1 \frac{3}{5}$  in snout. stimpsoni.

a<sup>2</sup>. Bathycongrus. Head equals or little greater than trunk as measured to vent.

e<sup>1</sup>. Dorsal begins eye diameter or less before gill opening.

f<sup>1</sup>. Small patch of teeth anteriorly or on head of vomer; eye  $4 \frac{1}{8}$ , equals snout.

bleekeri.

f<sup>2</sup>. Few teeth on vomer anteriorly; eye 6 or more,  $1 \frac{1}{2}$  in snout; vertical fins posteriorly with black edge. squaliceps.

f<sup>3</sup>. Teeth in very broad band moderately long, on vomer; eye  $8 \frac{2}{3}$ , 2 in snout; fins nearly black. musteliceps.

e<sup>2</sup>. Dorsal begins over gill opening; eye 8, 2 in snout; gray, vertical fins with narrow black edge posteriorly. nasicus.

Bathycongrus macrocercus (Alcock)

Congromuraena macrocercus ALCOCK, Journ. Asiatic Soc.

Bengal, vol. 63, pt. 2, 1894, p. 134 (on Congromuraena longicauda ALCOCK, 1889); vol. 65, pt. 2, 1896, p. 337 (reference); Cat. Deep Sea Fishes Indian Mus., 1899, p. 198 (Andaman Sea, 265 fathoms; Bay of Bengal, 240 to 276 fathoms).

Bathycongrus macrocercus OGILBY, Proc. Linn. Soc. New South

Wales, vol. 28, pt. 3, August 31, 1898, p. 293 (reference).

Congromuraena longicauda (not RAMSAY and OGILBY) ALCOCK, Ann.

Mag. Nat. Hist., ser. 6, vol. 4, 1889, p. 455. Andaman Sea, 265 fathoms; ser. , vol. 8, 1891, p. 135 (Bay of Bengal); ser. 6, vol. 10, 1892, p. 362 (Bay of Bengal, 200 to 300 fathoms); Illustrat. Zool. Investigator, pt. 1, 1892, pl. 7, fig. 5.

Congermuraena longicauda GOODE and BEAN, Oceanic Ichth.,

1895, p. 138 (reference).

Bathycongrus aequoreus (Gilbert and Cramer)

Congermuraena aequorea GILBERT and CRAMER, Proc. U. S. Nat.

Mus., vol. 19, 1897, p. 405, pl. 37. N.  $21^{\circ}12'$  W.  $157^{\circ}38'30''$ , 375 fathoms.

Congrellus aequoreus OGILBY, Proc. Linn. Soc. New South

Wales, vol. 28, pt. 3, August 31, 1898, p. 291 (reference).

Leptocephalus aequoreus GILBERT, Bull. U. S. Fish Comm.,

vol. 23, pt. 2, 1903 (1905), p. 584 (off Oahu; Kauai; 164 to 469 fathoms).

Depth  $2 \frac{1}{5}$  to  $2 \frac{2}{3}$  in head,  $12 \frac{1}{2}$  to  $18 \frac{3}{4}$  to caudal base; head  $5 \frac{2}{5}$  to 7,  $2 \frac{1}{5}$  to  $2 \frac{3}{4}$  to vent, width 3 to  $3 \frac{1}{3}$  in its length; combined head and trunk  $1 \frac{1}{2}$  to  $1 \frac{3}{4}$  in tail to caudal base. Snout  $3 \frac{2}{5}$  to  $3 \frac{2}{3}$  in head; eye  $5 \frac{1}{2}$  to 7,  $1 \frac{3}{4}$  to 2 in snout, greatly exceeds or  $1 \frac{1}{4}$  to  $1 \frac{1}{2}$  times interorbital; mouth cleft reaches opposite hind pupil edge,  $2 \frac{1}{2}$  to  $2 \frac{4}{5}$  in head; teeth large, strong, simple, rather large patch on premaxillary exposed, in rather narrow bands in jaws with outer row enlarged and flaring little outward; 2 rather large prominent simple conic teeth on vomer; tongue free; interorbital  $8 \frac{3}{5}$  to 9, convex. Gill opening  $5 \frac{1}{8}$  to  $7 \frac{4}{5}$ , below pectoral base.

Lateral line distinct, axial along side.

Dorsal origin over gill opening to first fifth of depressed pectoral, fin height  $3 \frac{2}{5}$  to  $4 \frac{1}{2}$  in head; anal fin height  $4 \frac{1}{2}$  to  $4 \frac{4}{5}$ ; caudal  $2 \frac{1}{5}$  to  $6 \frac{1}{3}$ , pointed, small or long, pectoral 3 to  $3 \frac{1}{3}$ .

Largely uniform brown, under surface of head and branchiostegal paler to whitish. Iris gray white. Fins all pale brownish, rays of dorsal medially more or less grayish; anal whitish only fin more grayish medially, becoming dark neutral gray posteriorly on fin, inclusive of caudal. Pectoral pale or whitish.

Related to *Bathycongrus nasicus* but differing in proportions, larger and stronger dentition. Premaxillary teeth more extended along lower profile of snout than in *B. roosendaali*.



6681. D. 5298. Matocot Point, S.  $38^{\circ}$ E., 6.70 miles (N.  $13^{\circ}43' 25''$  E.  $120^{\circ}57' 40''$ ), China Sea. In 140 fathoms. July 24, 1908. Length 338 mm.

7722. Manila market, Luzon. March 20, 1908. Caudal  $2 \frac{1}{2}$  in head. Sides of head and fore part of side of trunk speckled with dark brown than body color. Length 308 mm.

8321. D. 5393. Pangananan Point, Talajit Island, S.  $81^{\circ}$  E. 2.9 miles (N.  $11^{\circ}56' 40''$  E.  $124^{\circ}14'$ ), between Samar and Masbate. In 140 fathoms. March 13, 1909. Length 300 to 344 mm. 2 examples.

3693 and 3694. D. 5387. Bagatao Island Light (outer), S.  $80^{\circ}$ E., 27 miles (N.  $12^{\circ}54' 40''$  E.  $123^{\circ}20' 30''$ ), between Burias and Luzon. In 209 fathoms. March 11, 1909. Length 258 to 290 mm.

3757. D. 5388. Bagatao Island Light (outer), S.  $86^{\circ}$ E., 21 miles (N.  $12^{\circ}51' 30''$  E.  $123^{\circ}26' 15''$ ), between Burias and Luzon. In 226 fathoms. March 11, 1909. Length 318 mm.

4038. D. 5512. Camp Overton Light, S.  $76^{\circ}$ E., 14 miles (N.  $8^{\circ}16' 2''$  E.  $123^{\circ}58' 26''$ ), northern Mindanao and vicinity. In 445 fathoms. August 7, 1909. Length 395 mm.

4221. D. 5655. Cape Tabako, N.  $7^{\circ}$ E., 13 miles (S.  $3^{\circ}34' 10''$  E.  $120^{\circ}50' 30''$ ), Gulf of Boni, Celebes. In 608 fathoms. December 18, 1909. Length 148 mm.

2312 and 2313. D. 5402. Capitancillo Island Light, S.  $37^{\circ}$  W., 16.1 miles (N.  $11^{\circ}11' 45''$  E.  $124^{\circ}15' 45''$ ), between Leyte and Cebu. In 188 fathoms. March 16, 1909. Length 217 to 240 mm.

3952 and 3955. D. 5194. Chocolate Island, N.  $66^{\circ}$ W., 8 miles (N.  $11^{\circ}15'30''$  E.  $124^{\circ}11'$ ), off northern Cebu. In 148 fathoms. April 3, 1908. Length 204 to 222 mm.

1462 to 1464. D. 5550. Jolo Light (Jolo), N.  $83^{\circ}$ E., 15.5 miles (N.  $6^{\circ}2'$  E.  $120^{\circ}44'40''$ ), Jolo Island and vicinity. In 258 fathoms. Sept. 17, 1909. Length 225 to 336 mm.

1391. D. 5505. Macabalan Point Light (Mindanao), S.  $31^{\circ}$  E., 7.7 miles (N.  $8^{\circ}37'15''$  E.  $124^{\circ}36'$ ), northern Mindanao and vicinity. In 220 fathoms. August 5, 1909. Length 270 mm.

3850. D. 5621. Makyan Island (S.), N.  $54^{\circ}$ W., 3 miles (N.  $0^{\circ}15'$  E.  $127^{\circ}24'35''$ ). In 298 fathoms. November 28, 1909. Length 264 mm.

2582. D. 5395. Panalangan Point, Talajit Island, S.  $81^{\circ}$ E., 2.9 miles (N.  $11^{\circ}56'40''$  E.  $124^{\circ}14'$ ), between Samar and Masbate. In 140 fathoms. March 15, 1909. Length 270 mm.

3806. D. 5643. Pendek Island (N.), S.  $77^{\circ}$ E., 1.7 miles (S.  $5^{\circ}11'45''$  E.  $122^{\circ}42'36''$ ), Buton Strait. In 215 fathoms. December 15, 1909. Length 185 mm.

3536. D. 5348. Point Tabonan, S.  $89^{\circ}$ E., 33.5 miles (N.  $10^{\circ}57'45''$  E.  $118^{\circ}38'15''$ ), Palawan Passage. In 375 fathoms. December 27, 1908. Length 235 mm.

- 2165 and 2166. D. 5523. Point Tagolo Light, S.  $48^{\circ}$  W., 6.7 miles (N.  $8^{\circ}48'44''$  E.  $123^{\circ}27'35''$ ), northern Mindanao and vicinity. August 10, 1909. Length 267 to 281 mm.
- 3374 and 3376. D. 5406. Ponson Island (n.), S.  $88^{\circ}$  E., 10.2 miles (N.  $10^{\circ}49'3''$  E.  $124^{\circ}22'30''$ ), Dupon Bay, Leyte and vicinity. In 298 fathoms. March 17, 1909. Length 268 to 292 mm.
3445. D. 5542. Tagolo Light, S.  $70^{\circ}$  W., 13.2 miles (N.  $8^{\circ}48'30''$  E.  $123^{\circ}35'30''$ ), northern Mindanao and vicinity. In 200 fathoms. April 20, 1909. Length 264 mm.
3583. D. 5391. Tubig Point (Destacado Island), N.  $31^{\circ}$  E., 3 miles (N.  $12^{\circ}13'15''$  E.  $124^{\circ}5'3''$ ), between Samar and Masbate. In 118 fathoms. March 13, 1909. Length 201 mm.
- 2934 and 3523. D. 5392. Tubig Point, N.  $49^{\circ}$  E., 5 miles (N.  $12^{\circ}12'35''$  E.  $124^{\circ}2'48''$ ), between Samar and Masbate. In 135 fathoms. March 13, 1909. Length 162 to 273 mm.
- 47696 U. S. N. M. Hawaii. Albatross Station 3474. Length 190 and 523mm. (type larger). 2 examples.



Bathycongrus megalops new species

Depth 3 in head, 19 to caudal base; head  $6 \frac{1}{3}$  in its length; combined head and trunk  $1 \frac{4}{5}$  in tail to caudal base. Snout  $3 \frac{3}{5}$  in head; eye 5,  $1 \frac{2}{5}$  in snout, over twice interorbital; mouth cleft reaches  $\frac{2}{5}$  in eye, length  $2 \frac{3}{4}$  in head; teeth conic, in narrow bands, largely small, only anterior little enlarged; premaxillary with broad exposed band, in about 5 irregular series, before closed mandible tip; few small teeth on front of vomer with median one little enlarged and prominent; interorbital  $12 \frac{1}{2}$ , narrow, concave. Gill opening  $7 \frac{1}{2}$ , before and below pectoral base.

Lateral line axial, complete, prominent.

Dorsal origin opposite first fifth of depressed pectoral, fin height  $3 \frac{2}{5}$  in head; anal fin height 5; caudal  $4 \frac{1}{4}$ , pointed; pectoral  $2 \frac{4}{5}$ .

Uniform pale brownish, slightly paler to whitish on under surface of head and belly. Inside mouth and gill openings whitish. Iris grayish. Opercles with large dark brown area. Fins all pale brown, edge of dorsal grayish or darker terminally. Anal and pectoral uniformly pale.

Diagnosis. Related to Bathycongrus roosendaali Weber and Beaufort chiefly in its long caudal, dentition, mouth cleft, etc., though differs in the greatly larger orbit, slightly backward dorsal origin and longer pectoral.



Type No.

U. S. N. M.

17804. D. 5527. Balicasag Island (C.), N. 14°W., 8.2 miles (N. 9° 22' 30" E. 123°42' 40"), northern Mindanao. In 392 fathoms. August 11, 1909. Length 330 mm. Type.

4148. D. 5537. Apo Island (C.), S. 46°W., 11.8 miles (N. 9°11' E., 123°23'), between Negros and Siquijor. In 254 fathoms. August 19, 1909. Length 96 mm. Two rows of black dots longitudinally on trunk and tail below, upper row more regular, with more dots and close to lateral line.

Bathycongrus roosendaali (Weber and Beaufort)

Congrellus roosendaali WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 261, fig. 110 (dentition), fig. 112. Off northeast point of Java, 270 meters.

Bathycongrus stimpsoni new species

Depth  $2 \frac{1}{4}$  to  $3 \frac{1}{8}$  in head,  $17 \frac{4}{5}$  to  $18 \frac{1}{4}$  to caudal base; head  $6 \frac{3}{4}$  to 7,  $2 \frac{2}{5}$  to  $2 \frac{2}{3}$  to vent, width  $3 \frac{3}{5}$  to  $3 \frac{4}{5}$  its length; combined head and trunk  $1 \frac{3}{5}$  to  $1 \frac{9}{10}$  in tail to caudal base. Snout  $3 \frac{1}{2}$  to  $3 \frac{4}{5}$  in head; eye  $4 \frac{7}{8}$  to 6,  $1 \frac{2}{5}$  to  $1 \frac{3}{5}$  in snout, greatly exceeds interorbital; mouth cleft reaches  $\frac{1}{2}$  to  $\frac{3}{5}$  in eye, length  $2 \frac{2}{5}$  to  $2 \frac{2}{3}$  in head; teeth small, conic, in narrow bands in jaws becoming minute posteriorly and some anterior, especially below, noticeably largest; premaxillias with broad band of exposed rather large teeth before closed mandible tip, formed as 3 or 4 irregular series and followed by row of 4 or 5 moderately large simple teeth on vomer and first often largest interorbital 8 to  $14 \frac{1}{2}$ , nearly or quite level. Gill opening  $5 \frac{4}{5}$  to  $6 \frac{2}{5}$ , oblique, mostly below and before pectoral base.

Lateral line axial, prominent.

Dorsal origin over middle of depressed pectoral, fin height  $3 \frac{2}{5}$  to 7 in head; anal fin height  $4 \frac{1}{4}$  to  $8 \frac{1}{2}$ ; caudal  $4 \frac{1}{4}$  to 8, pointed; pectoral  $3 \frac{7}{8}$  to 4.

Uniformly pale brown to uniform dusky with age, scarcely paler on belly and under surface of head. Top and sides of head, especially on opercle, dark brown. Iris grayish. Inside gill opening blackish. Fins all pale brownish, vertical ones only dark or dusky short extent posteriorly.

Diagnosis. Known by its slender and somewhat compressed head and body, the vertical fins only dark posteriorly and the eye moderately large.

Type No.                      U. S. N. M.

10201. D. 5467. Atulayan Island (S.), S.  $79^{\circ}$ W., 2.5 miles (N.  $13^{\circ}35'27''$  E.  $123^{\circ}37'18''$ ), east coast Luzon. In 480 fathoms. June 18, 1909. Length 455 mm.
9185. D. 5492. Diuata Point (W.), S.  $45^{\circ}$ W., 15.2 miles (N.  $9^{\circ}12'45''$  E.  $125^{\circ}20'$ ), between Leyte and Mindanao. In 735 fathoms. August 1, 1909. Length 523 mm.
9191. D. 5494. Diuata Point (N.), N.  $74^{\circ}$ W., 4.2 miles (N.  $9^{\circ}6'30''$  E.  $125^{\circ}18'40''$ ), between Leyte and Mindanao. In 678 fathoms. August 2, 1909. Length 568 mm.
19144. D. 5511. Camp Overton Light, S.  $80^{\circ}$ E., 15.3 miles (N.  $8^{\circ}15'20''$  E.  $123^{\circ}57'$ ), northern Mindanao and vicinity. In 410 fathoms. August 7, 1909. Length 331 mm.
5470. D. 5202. Limasaua Island (E.), S.  $2^{\circ}$ E., 16.70 miles (N.  $10^{\circ}12'$  E.  $125^{\circ}4'10''$ ), Sogod Bay, southern Leyte. In 502 fathoms. April 10, 1908. Length 335 mm.
6212. D. 5266. Matocat Point, S.  $22^{\circ}$ E., 7 miles (N.  $13^{\circ}44'36''$  E.  $120^{\circ}59'15''$ ), Verde Island Passage and Batangas Bay. In 100 fathoms. June 8, 1908. Length 360 mm.

7646. D. 5348. Point Tabonan, S.  $89^{\circ}$  E., 33.5 miles (N.  $10^{\circ}$   $57' 45''$  E.  $118^{\circ} 38' 15''$ ), Palawan Passage. In 375 fathoms. December 27, 1908. Length 345 to 350 mm. 3 examples.

2344. D. 5215. Palanog Light, S.  $5^{\circ} 30'$  E., 8.50 miles (N.  $12^{\circ} 31' 30''$  E.  $123^{\circ} 35' 24''$ ), east of Masbate. In 604 fathoms. April 21, 1908. Length 518 mm.



Bathycongrus bleekeri new species

Depth  $13 \frac{1}{4}$  to caudal base,  $2 \frac{3}{4}$  in head; head  $5 \frac{1}{4}$  to caudal base,  $1 \frac{7}{8}$  to vent, head width  $3 \frac{1}{5}$  in its length; combined head and trunk 2 in tail. Snout  $4 \frac{1}{8}$  in head; eye  $4 \frac{1}{8}$ , equals snout, over twice interorbital; mouth cleft reaches opposite middle of eye, length  $2 \frac{3}{5}$  in head; upper jaw protrudes nearly  $\frac{2}{5}$  snout length beyond front of lower jaw; lips with rather broad lateral folds; teeth simple, conic, small, uniserial in jaws; small patch of similar teeth on head of vomer; 2 rows of exposed premaxillary teeth on under surface of snout; interorbital low, width 8 in head, level. Gill opening  $5 \frac{2}{3}$  in head, vertical slit before and below pectoral.

Lateral line distinct, complete.

Dorsal origin slightly before gill opening, fin height 3 in head, caudal  $4 \frac{1}{8}$ ; anal fin height 6; pectoral length  $2 \frac{1}{2}$ .

Largely uniform pale brown. Muzzle pale or whitish. Iris gray. Gill opening pale. Along or close below some very inconspicuous scattered minute black spots or dots. Fins uniform pale brown.

Diagnosis. Related to Bathycongrus squaliceps and B. musteliceps but differing in its larger eye and coloration.

Type No.

U. S. N. M.

D. 5557. Cabalian Point, N.  $70^{\circ}$ W., 5.2 miles (N.  $5^{\circ}51'30''$   
E.  $121^{\circ}1'$ ), Jolo Island and vicinity. In 13 fathoms. Sept.  
18, 1909 (labeled May 22, 1908). Length 80 mm. Type.

(For Pieter Van Bleeker who studied Philippine fishes, if only  
incidental to his exhaustive work on those of the East Indies.)

Bathycongrus squaliceps (Alcock)

Congromuraena squaliceps ALCOCK, Journ. Asiatic Soc. Bengal, vol. 62, pt. 2, 1893, p. 183. Bay of Bengal, 128 fathoms; vol. 53, pt. 2, 1894, p. 134 ( ); vol. 65, 65, pt. 2, 1896, p. 337 (off Madras coast, 128 to 210 fathoms; Cat. Deep Sea Fishes Indian Mus., 1899, p. 197 (Bay of Bengal, 128 to 210 fathoms)).

Bathycongrus squaliceps OGILBY, Proc. Linn. Soc. New South Wales, vol. 28, pt. 3, August 3, 1898, p. 93 (reference).

Bathycongrus musteliceps (Alcock)

Congromuraena musteliceps ALCOCK, Journ. Asiatic Soc. Bengal, vol. 63, pt. 2, 1894, p. 133, pl. 7, fig. 5. Bay of Bengal, 65 to 250 fathoms; Illustrat. Zool. Investigator, pt. 3, 1895, pl. 15, fig. 7; Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 337 (reference); Cat. Deep Sea Fishes Indian Mus., 1899, p. 199 (type).

Bathycongrus musteliceps OGILBY, Proc. Linn. Soc. New South Wales, vol. 28, pt. 3, August 31, 1898, p. 292 (reference).

Bathycongrus nasicus (Alcock)

Congromuraena nasica ALCOCK, Journ. Asiatic Soc. Bengal, vol. 62, pt. 2, 1893, p. 183. Bay of Bengal, 128 to 210 fathoms; vol. 63, pt. 2, 1894, p. 134 ( ); Illustrat. Zool. Investigator, Fishes, pt. 2, 1894, pl. 9, fig. 2; Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 337 (off Madras coast, 128 to 210 fathoms); Cat. Deep Sea Fishes Indian Mus., 1899, p. 198 (Bay of Bengal, 128 to 210 fathoms).

Bathycongrus nasicus OGILBY, Proc. Linn. Soc. New South Wales, vol. 28, August 31, 1898, p. 292 (reference).



Depth  $2 \frac{4}{5}$  in head;  $13 \frac{3}{4}$  to caudal base, head  $5 \frac{4}{5}$ ,  $1 \frac{7}{8}$  to vent; width  $3 \frac{4}{5}$  its length; combined head and trunk  $1 \frac{1}{2}$  in tail to caudal base. Snout 4 in head; eye  $8 \frac{1}{5}$ , 2 in snout, 1 in interorbital; mouth cleft reaches opposite hind eye edge, length  $2 \frac{3}{4}$  in head; teeth conic, in rather narrow bands in jaws and outer row little enlarged; transverse patch of premaxillary teeth rather large conic, exposed and followed by short row of 4 on front of vomer of which first 2 larger but not conspicuously prominent; tongue free; interorbital 7, nearly level. Gill opening  $5 \frac{1}{3}$ , below pectoral base.

Lateral line axial, prominent.

Dorsal origin begins over upper hind end of gill opening, fin height  $5 \frac{3}{4}$  in head; anal fin height  $8 \frac{7}{8}$ ; caudal  $7 \frac{1}{4}$ , pointed, pectoral  $3 \frac{3}{4}$ .

Pale brown, lower surface of head and belly whitish. Lateral line whitish. Iris grayish, investing membranes whitish. Large dark brown blotch of opercle. Dorsal and anal whitish, posterior margins blackish though this extended further forward on anal. Caudal pale basally, end whitish, medially dusky. Pectoral pale or whitish.

46753 U. S. N. M. Bay of Bengal. Investigator Collection. Length 255 mm.

Congrhynchus new genus

Type Congrhynchus talabonoides new species.

Body elongate, compressed, deepest medially in trunk. Tail moderately long, compressed and acuminate, less than twice rest of body. Head conic, with elongated muzzle. Snout long, pointed, protruded well beyond end of mandible above which its edge each side with slight notch. Eye large, advanced but little before middle in head length, covered with skin continuous with that of head. Teeth moderately small, simple, conic; upper with premaxillary patch separated from those of jaw in which each band anteriorly of 4 irregular series with outer row anteriorly flaring little outward and all rows converging posteriorly into single row; lower with 3 or 4 anterior rows with outer series flaring out and inner teeth much smaller, especially posteriorly; vomerine biserial, of short extent.

Hind nostril slit, long as pupil, before eye. Lips thin, little developed. Tongue free in front. Front nostril in short tube near snout end. Gill openings moderate, equal interspace. Lateral line axial, nearly complete. Dorsal fin inserted over gill opening. Pectoral moderate, inserted in lower half of body depth.

One species, in deep water.

(Conger; *σύγχος* snout, with reference to its long muzzle.)

Congrhynchus talabonoides new species.

Depth  $2 \frac{3}{7}$  to  $3 \frac{2}{3}$  in head,  $16 \frac{1}{5}$  to  $21 \frac{1}{5}$  to caudal base; head  $5 \frac{4}{5}$  to  $5 \frac{7}{8}$ ,  $2 \frac{1}{4}$  to  $2 \frac{1}{2}$  in head, width  $4 \frac{1}{8}$  to  $4 \frac{1}{5}$ ; combined head and trunk  $1 \frac{1}{2}$  to  $1 \frac{3}{5}$  in tail. Snout 3 to  $3 \frac{1}{5}$  in head; eye 8 to  $8 \frac{1}{5}$ ,  $2 \frac{1}{2}$  to  $2 \frac{2}{3}$  in snout, greatly exceeds interorbital; mouth cleft reaches  $\frac{3}{4}$  in eye, length  $2 \frac{1}{4}$  to  $2 \frac{2}{5}$  in head; rather broad bands of small sharp conic teeth on premaxillaries and front of jaws, former exposed as mouth closes and posteriorly smaller and bands narrowing, outer row in each jaw also larger and laterally all flaring out; only several small teeth like others adjacent on head of vomer, none on shaft; interorbital  $12 \frac{3}{4}$  to 16, nearly level. Gill opening  $5 \frac{1}{2}$  to  $7 \frac{1}{2}$ , low.

Lateral line axial, complete.

Dorsal origin over hind edge of gill opening, fin height  $4 \frac{1}{4}$  to  $6 \frac{1}{2}$  in head; anal fin height  $5 \frac{1}{5}$  to  $5 \frac{1}{2}$ ; caudal  $4 \frac{1}{5}$  to  $4 \frac{1}{4}$ ; pectoral  $4 \frac{1}{5}$  to  $4 \frac{3}{5}$ .

Brown, but slightly paler on under surface of head and belly. Iris gray brown. Fins brownish, verticals dusky marginally and terminally. Pectorals uniformly light brown. Gill openings pale.

Diagnosis. Characters in those of the genus and especially evident in the uniform dentition, without canines, some of the outer teeth flaring outward and the short biserial vomerine series. The long jaws, suggestive of Chlopsis or even Muroenesox, but the dentition entirely different.

Type No.

U. S. N. M.

5597. D. 5216. Anima Sola Island, N.  $44^{\circ}$  W., 29.50 miles (N.  $12^{\circ}52'$  E.  $123^{\circ}23' 30''$ ), between Burias and Luzon. In 215 fathoms. April 22, 1908. Length 305 mm.

D. 5247. Dumalag Island (S.), S.  $78^{\circ}$  W., 3.8 miles (N.  $7^{\circ}2'$  E.  $125^{\circ}38' 45''$ ), Gulf of Davao. In 135 fathoms. May 18, 1908. Length 118 mm. Along side of body 2 irregular rows of small dusky spots, more uniform on trunk and more or less scattered on tail.

2634. D. 5502. Macabalan Point Light (Mindanao), S.  $35^{\circ}$  E., 8.2 miles (N.  $8^{\circ}37' 37''$  E.  $124^{\circ}35'$ ), northern Mindanao and vicinity. In 214 fathoms. August 4, 1909. Length 292 mm. Type.



Genus Coloconger Alcock

Coloconger ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 4, 1889, p. 456. Type Coloconger ramiceps ALCOCK, monotypic.

Tail less than combined head and trunk. Head rather short. Snout short. Eye large, far advanced. Mouth cleft wide, extends little beyond middle of eye, jaws equal. Teeth uniserial in jaws, none on vomer. Tongue free. Nostrils large, front one subtubular, hind one superior or above front angle of orbit. Gill openings into pharynx wide slits. Gill openings separate. No scales. Lateral line axial. Vertical fins well developed, dorsal origin over pectoral base. Pectoral rather large, inserted within lower half of body depth.

Coloconger raniceps Alcock

Coloconger raniceps ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 4, 1889, p. 456. Andaman Sea off Ross Island, 265 to 271 fathoms; ser. 6, vol. 10, 1892, p. 364 (Bay of Bengal, 200 to 400 fathoms); Illustrat. Zool. Investigator, Fishes, pt. 1, 1892, pl. 7, fig. 4. -- GOODE and BEAN, Oceanic Ichth., 1895, p. 139 (reference). -- ALCOCK, Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 337 (Andaman Sea, 265 to 271 fathoms; Bay of Bengal, 200 to 400 fathoms); Cat. Deep Sea Fishes Indian Mus., 1899, p. 196 (Andaman Sea, 265 to 405 fathoms; Bay of Bengal, 200 to 400 fathoms; Arabian Sea off Malabar coast, 224 to 284 fathoms).

Genus Uroconger Kaup

Uroconger KAUP, Cat. Apodal Fish Brit. Mus., 1854, p. 110.

Type Congrus lepturus RICHARDSON, monotypic.

Congerodon KAUP, Archiv Naturg., 1856, p. 73. Type Congerodon indicus KAUP, monotypic.

Body elongate, anteriorly partly cylindrical, posterior compressed with long tapering tail. Head conic, depressed. Snout long. Eye rather large, covered with skin without free orbital edge. Mouth cleft moderate, reaches eye center or beyond. Lower jaw shorter. Lips moderate, membranous, upper with row of short slit like pores. Teeth acicular, unequal, 2 distant rows in maxillary, biserial anteriorly in mandible where short third inner row. Vomer with some large teeth in front which may be followed by series of smaller ones. Pre-maxillary with unequal teeth in 2 irregular series, an outer tooth may be enlarged. Tongue free. Gill openings large, vertically before and below pectoral bases. Lateral line distinct. Vertical fins confluent, dorsal begins over pectoral base. Pectoral well developed.

Analysis of species

- a<sup>1</sup>. Eyes lateral, directed laterally or from sides of head.
- b<sup>1</sup>. Uroconger. Depth 20 to 23; head and trunk more than  $1/2$  of tail; pectoral 9 to 11.
- c<sup>1</sup>. Pectoral  $3 \frac{1}{3}$  to 4 in head; dorsal begins above pectoral base. lepturus.
- c<sup>2</sup>. Pectoral  $2 \frac{2}{5}$  in head; dorsal origin at last fifth of pectoral. vicinus.
- b<sup>2</sup>. Bathyuroconger new subgenus. Depth 12 or 13; head and trunk less than  $1/2$  of tail; pectoral 17. braueri.
- a<sup>2</sup>. Uranconger new subgenus. Eyes superior and directed upward on head; depth  $16 \frac{1}{4}$ . dentatus.



Subgenus Uroconger Kaup

Greatly elongate, depth 20 to 23 in length. Combined head and trunk more than  $1/2$  of tail. Head conic, compressed. Dentition little conspicuous. Interspace between gill openings equals their length. Pectoral rays 9 to 11.

Uroconger lepturus (Richardson)

Congrus lepturus RICHARDSON, Voy. Sulphur, Fish, 1844, p. 106, pl. 56, figs. 1 to 6. Canton, China; Ichth. Voy. Erebus and Terror, 1844-48, p. 109 (China Seas); Ichth. China Japan, 1846, p. 312 (Canton).

Conger lepturus BLEEKER, Act. Soc. Sci. Ind. Néerland, No. 9, vol. 3, 1857-58, p. (6) 49 (Siboga, Sumatra). -- BOULENGER, Ann. Mag. Nat. Hist., ser. 7, vol. 7, 1901, p. 261 (N. 23° to 24° E. 57° to 58°, 143 to 205 fathoms). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 265, figs. 113 and 114 (Celebes). -- FOWLER, Hong Kong Naturalist, vol. 3, No. 1, March 1932, p. 53 (India).

Uroconger lepturus KAUP, Archiv Naturg., 1856, pt. 1, p.

71 (reference); Cat. Apodal Fish Brit. Mus., 1856, p. 110 (compiled). -- BLEEKER, Atlas, Ichth. Ind. Néerland, vol. 4, 1864, p. 29, pl. (5) 149, fig. 1 (Java, Sumatra, Celebes); Nederland, Tijds. Dierk., vol. 2, 1865, p. 57 (Amoy). -- KNER, Reise Novara, Fische, 1865, p. 372 (Java). -- GUNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 44 (China; East Indies). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 5, 1874, p. 37 (Formosa). -- DAY, Fishes of India, pt. 4, 1878, p. 661, pl. 170, fig. 1. -- KÁROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 185 (Nagasaki). -- DAY, Fauna Brit. India, vol. 1, 1889, p. 89, fig. 37. -- GOODE and BEAN, Oceanic Ichth., 1895, p. 138 (reference). -- ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 587 (Luzon; Manila Bay). -- RUTTER, Proc. Acad. Nat. Sci. Philadelphia, 1897, p. 61 (Swatow). -- JORDAN and SEALE, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 6 (Manila). -- HERRE, Philippine Journ. Sci., vol. 23, No. 2, August 1923, p. 146, pl. 1, fig. 3 (Manila, Mindoro, Iloilo). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 191 (Zululand coast, 26 fathoms). -- JORDAN and HUBBS, Mem. Carnegie Mus., vol. 10, No. 2, June 27, 1925, p. 196 (Snyder's material). -- FOWLER, Journ. Bombay Nat. Hist. Soc., vol. 32, No. 2, 1928, p. 255 (off Bombay). -- CHEN, Bull. Biol. Dep. Sun Yat Sen Univ., vol. 1, No. 1, 1929, p. 13, fig. 6 (dentition) (Ying khou).

Congerodon indicus KAUP, Archiv Naturg., 1856, pt. 1, p.

74. Indian Ocean (Paris Museum).

Conger oxyurus (KUHL and VAN HASSELT) BLEEKER, Atlas Ichth.

Ind. Néerland, vol. 4, 1864, p. 29 (Museum Lugd. Batav.,  
name in synonymy).

Leptocephalus retrotinctus (not JORDAN and SNYDER), SNYDER,

Proc. U. S. Nat. Mus., vol. 42, 1912, p. 405 (Kagoshima).



Depth  $18 \frac{2}{5}$  to 28, to caudal base,  $2 \frac{1}{2}$  to 3 in head; head  $8 \frac{1}{5}$  to  $9 \frac{1}{5}$  to caudal base,  $2 \frac{1}{4}$  to  $2 \frac{2}{3}$  to vent, width 3 to  $3 \frac{1}{4}$  its length; combined head and trunk  $2 \frac{1}{8}$  to  $2 \frac{2}{5}$  in tail to caudal base. Snout  $3 \frac{3}{4}$  to 4 in head; eye  $6 \frac{1}{5}$  to 8, 2 in snout, subequal with interorbital; mouth gape reaches opposite hind pupil edge, or hind eye edge, length  $2 \frac{1}{5}$  to  $2 \frac{4}{5}$  in head; teeth biserial, inner longer, depressible, also single row down vomer; interorbital  $7 \frac{2}{5}$  to  $7 \frac{7}{8}$  in head. Gill opening 6 to  $6 \frac{2}{3}$  in head.

Lateral line distinct.

Dorsal origin over pectoral to first fifth in length of depressed pectoral, fin height  $3 \frac{1}{2}$  in head; anal fin height 5; caudal  $3 \frac{1}{3}$  to  $6 \frac{1}{2}$ ; pectoral  $3 \frac{2}{3}$  to  $3 \frac{3}{4}$ .

Brown, whitish on under surface of head and belly. Iris whitish. Vertical fins dark brown, to dusky. Caudal dusky. Pectoral pale. Inside gill opening pale to whitish.

Zululand, India, East Indies, Philippines, China, Formosa, Japan.

21751. Cebu market. March 28, 1909. Length 208 mm.

22986. Cebu market. March 22, 1909. Length 220 mm.

12149. Manila market. March 12, 1908. Length 352 mm.

Head and trunk  $2 \frac{1}{10}$  in tail.

3802. D. 5517. Point Tagolo Light, S.  $83^{\circ}$  W., 10.5 miles  
(N.  $8^{\circ} 45' 30''$  E.  $123^{\circ} 33' 45''$ ), northern Mindanao and  
vicinity. In 169 fathoms. August 9, 1909. Length 270  
mm. Head and trunk  $2 \frac{1}{5}$  in tail.

Uroconger vicinus Vaillant

Uroconger vicinus VAILLANT, Exped. Sci. Travailleur et  
Talisman, Poiss., 1888, p. 86, pl. 6, fig. 1. Banc d'  
Arguin, off Soudan, off Cape Verde Islands. -- ALCOCK,  
Ann. Mag. Nat. Hist., ser. , vol. 10, 1892, p. 363  
(off Madras, 475 fathoms). -- GOODE and BEAN, Oceanic  
Ichth., 1895, p. 138, pl. 42, fig. 160 (immature) (N.  
23° 10' 36" W. 82° 20' 28", 146 fathoms). -- JORDAN  
and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896,  
p. 358 (compiled). -- ALCOCK, Journ. Asiatic Soc. Bengal,  
vol. 65, pt. 2, 1896, p. 338 (reference); Cat. Deep Sea  
Fishes Indian Mus., 1899, p. 200 (Bay of Bengal, 475  
fathoms; Arabian Sea off Malabar; 430 to 636 fathoms).  
-- BARNARD, Ann. South African Mus., vol. 21, pt. 1,  
June 1925, p. 192 (off Cape Point, 345 fathoms).

Bathyuroconger new subgenus

Type Uroconger braueri WEBER and BEAUFORT.

Elongate, depth 12 to 13 in length, trunk and tail compressed. Combined head and trunk less than 1/2 of tail. Head conic, robust. Dentition conspicuous. Interspace between gill openings greater than their length. Pectoral ray 17.

Diagnosis. Distinguished from the littoral shore genus Uroconger by its slightly deeper body, broader interbranchial space and more numerous pectoral rays.



Uroconger braueri Weber and Beaufort

Uroconger braueri WEBER and BEAUFORT, Fishes Indo Austral.

Archipelago, vol. 3, 1916, p. 266 (on BRAUER).

Uroconger lepturus (not RICHARDSON) BRAUER, Deutsch.

Tiefsee Exped. Valdivia, vol. 15, Tiefsee Fische, 1906,  
p. 124 (S. 3° 22' 1" E. 101° 11' 5", 903 meters; S. 0°  
39' 2" E. 98° 3", 750 meters; N. 1° 47' 1" E. 96° 58' 7",  
660 meters; off western Sumatra; S. 0° 25' 5" E. 42° 49'  
4", 1019 meters; S. 0° 29' 3" E. 42° 47' 6", 977 meters,  
off East Africa).

Depth 2 to  $2\frac{4}{5}$  in head,  $14\frac{1}{8}$  to  $21\frac{3}{4}$  to caudal base; head  $7\frac{1}{10}$  to  $7\frac{3}{5}$ ,  $2\frac{3}{5}$  to  $2\frac{7}{8}$  to vent, width  $2\frac{2}{5}$  to 3 in its length; combined head and trunk  $1\frac{2}{3}$  in tail to caudal base. Snout  $3\frac{1}{3}$  to  $3\frac{2}{5}$  in head; eye  $6\frac{4}{5}$  to 7,  $1\frac{3}{4}$  to 2 in snout, 1 in interorbital; mouth cleft reaches opposite eye center, length  $2\frac{3}{5}$  to  $2\frac{4}{5}$  in head; teeth large, prominent, conic, 2 irregular rows on premaxillary exposed before tip of closed mandible; in jaws teeth anterior biserial but become smaller and uniserial posteriorly; row of 3 or 4 teeth on vomer, first or first and second largest and strongest; interorbital  $5\frac{1}{2}$  to 7, depressed. Gill opening  $6\frac{1}{2}$  to 7, little oblique, before and below pectoral.

Lateral line axial, distinct, complete.

Dorsal origin opposite first fifth or fourth of depressed pectoral, fin height  $3\frac{3}{4}$  to  $4\frac{1}{5}$  in head; anal fin height  $5\frac{2}{5}$  to 6; caudal  $5\frac{2}{5}$  to  $5\frac{4}{5}$ , pointed; pectoral  $3\frac{1}{2}$  to  $3\frac{4}{5}$ .

Pale brown, nearly uniform. Iris pale. Lips, under surface of head, opercular region and space about pectoral base dark neutral drab. Inside gill opening and vent neutral black. Vertical fins grayish, darker or nearly neutral black posteriorly inclusive of caudal. Pectoral dark basally, pale terminally.

10254 and 17800. D. 5585. Sipadan Island (M.), S. 89° W.,  
12 miles (N. 4° 7' E. 118° 49' 54"), Sibuko Bay, Borneo.  
In 476 fathoms. Sept. 28, 1909. Length 480 mm.

Uranoconger new genus

Type Uranoconger dentatus new species.

Body long, tail greatly longer than rest of body and tapering long and slender. Head conic. Snout long and conic, protrudes well beyond mandible. Eyes large, directed or facing upward. Mouth cleft moderately large. Dentition covered by broad fleshy lips, only large patch of conspicuous curved teeth in 4 series exposed, before mandible; teeth slender, numerous, rather large, forming bands in jaws with anterior, including those on premaxillaries and vomer, largest. Tongue free. Interorbital narrow. Gill opening about large as eye. No scales. Dorsal begins over pectorals, continuous with rather long caudal and anal. Pectoral well developed.

Diagnosis. Easily known by the large eyes, directed upward, and long caudal.



Uranococong odontostomus new species

Depth  $2 \frac{2}{3}$  in head,  $16 \frac{1}{4}$  to caudal base; head  $6 \frac{1}{4}$ ,  $2 \frac{2}{5}$  to vent; width  $3 \frac{1}{4}$  in its length; combined head and trunk  $2 \frac{3}{5}$  in tail to caudal base. Snout  $3 \frac{2}{5}$  in head; eye  $6 \frac{1}{8}$ ,  $1 \frac{4}{5}$  in snout, 2 times interorbital; mouth cleft reaches eye center, from snout tip  $2 \frac{2}{3}$  in head; front nostril in short tube near snout tip, hind one slit  $2 \frac{1}{4}$  eye diameters long close before middle of front eye edge; interorbital  $2 \frac{1}{6}$  in eye,  $14 \frac{1}{2}$  in head. Gill opening  $6 \frac{1}{5}$ , oblique.

Lateral line distinct, axial along side.

Dorsal origin opposite first third of depressed pectoral, fin height 4 in head; anal fin height  $4 \frac{1}{2}$ ; caudal  $2 \frac{3}{4}$ , pointed; pectoral  $3 \frac{1}{5}$ .

Pale brown. Iris gray, with pale brown to whitish investment, especially posteriorly. Inside gill openings blackish, branchiostegal region grayish. Belly dark as sides. Vertical fins pale brown basally, dusky or dark brown marginally. Pectoral whitish basally, greater terminal portion brownish.

Diagnosis. Characters contained in the genus.

4097. D. 5656. Olang Point, N.  $67^{\circ}$  W., 14.5 miles (N.  $3^{\circ} 17' 40''$  E.  $120^{\circ} 36' 45''$ ), Gulf of Boni, Celebes. In 484 fathoms. December 19, 1909. Length 377 mm.

Genus Poeciloconger Günther

Poeciloconger GUNTHER, Proc. Zool. Soc. London, 1871,

p. 673. Type Poeciloconger fasciatus GUNTHER, monotypic.

Body compressed, less than tail. Head pointed, without muciferous cavities. Snout long. Eye moderate, well advanced. Mouth cleft moderate, reaches below eye. Teeth villiform, in narrow bands in jaws and on vomer. Nostrils small, anterior without tube. Gill openings rather wide, close together. Vertical fins confluent, dorsal begins well before pectoral. Pectoral moderate.

Poeciloconger fasciatus Günther

Poeciloconger fasciatus GUNTHER, Proc. Zool. Soc. London, 1871, p. 673, pl. 68. Manado, Celebes; Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 393 (Tahiti). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 267, fig. 115 (compiled). -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 40 (compiled).



Genus Veternio Snyder

Veternio SNYDER, Bull. U. S. Fish Comm., vol. 22, 1902, (1904), p. 516. Type Veternio verus SNYDER, monotypic.

Body elongate, compressed, much less than tail. Head long. Snout long, pointed. Eye large, well advanced. Mouth cleft extends behind eye, lower jaw shorter. No teeth. Tongue free. Nostrils not tubular, anterior near snout tip, with narrow rims, posterior oblong and near eyes. Gill openings separate, with broad lunate slits. Vertical fins confluent, dorsal inserted over pectoral base. Pectoral placed rather low, large.

Veternio verus Snyder

Veternio verus SNYDER, Bull. U. S. Fish Comm., vol. 22,  
1902 (1904), p. 516, pl. 2, fig. 3. Honolulu. --

JORDAN and EVERMANN, Bull. U. S. Fish Comm., vol. 23,  
pt. 1, 1903 (1905), p. 79, pl. 5, fig. 1 (type). --

FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 40 (type;  
Hawaiian Islands); vol. 11, No. 5, 1931, p. 316  
(Waikiki).

Silvesterina new genus

Type Silvesterina parvibranchialis new species.

Body elongate, well compressed, tapering to long slender tail. Head small, compressed. Snout conic. Eye rather small, lateral. Mouth cleft moderate, jaws even. Teeth large, simple, curved, erect, rather wide set. Tongue free. Row of large pores above upper jaw and another row in rather deep groove along lower side of mandible, with several posteriorly along lower side of head. Front nostril pair of pores in short tube at side of snout tip; hind nostril rather large pore close before eye. Gill opening not larger than pupil of eye, little before and close below level of pectoral fin base. Dorsal begins over pectoral base, continuous with small caudal and long anal. Pectoral rays very slender, about 18, fin moderate.

Diagnosis. Apparently unique in the family for its very small gill opening, with the appearance of a large pore with a slightly elevated cutaneous rim. Combined head and body slightly over half length of tail.

For the late Capt. Charles F. Silvester, who studied the eels of Porto Rico.

*Silvesterina parvibranchialis* new species

Depth 2 to  $2\frac{1}{2}$  in head,  $13\frac{1}{4}$  to  $19\frac{2}{3}$  to caudal base; head  $6\frac{2}{3}$  to  $8\frac{1}{4}$ ,  $2\frac{3}{5}$  to  $2\frac{4}{5}$  to vent, width  $2\frac{1}{5}$  to  $3\frac{1}{3}$  in length; combined head and trunk  $1\frac{2}{3}$  to  $1\frac{9}{10}$  in tail to caudal base. Snout  $3\frac{1}{3}$  to  $3\frac{2}{3}$  in head; eye 6 to  $8\frac{1}{4}$ ,  $1\frac{3}{5}$  to  $2\frac{1}{8}$  in snout, once to twice interorbital; mouth cleft reaches  $2\frac{2}{5}$  in eye to opposite hind pupil edge, length  $2\frac{1}{10}$  to  $2\frac{2}{3}$  in head; teeth in jaws in moderately broad bands, narrowing posteriorly, outer row little longer and teeth often more wide spaced; 2 rather large teeth at front of vomer, depressible, first or second variable larger, conspicuous; interorbital  $5\frac{2}{5}$  to 10, slightly convex.

Lateral line conspicuous, axial.

Dorsal origin over pectoral origin or  $\frac{2}{5}$  of depressed pectoral, fin height  $2\frac{2}{3}$  to  $3\frac{3}{4}$  in head; anal fin height  $3\frac{3}{4}$  to  $4\frac{1}{4}$ ; caudal  $2\frac{2}{3}$  to  $4\frac{1}{2}$ , pointed; pectoral  $2\frac{1}{3}$  to  $2\frac{7}{8}$ , pointed.

Uniform drab. Iris grayish. Inside mouth, pharynx and opening pale or dusky. Lips and under surface of head little paler than upper. Fins all pale, vertical fins posteriorly all darker or deeper drab basally. Pectoral uniformly pale.

Diagnosis. Contained in the genus, with special reference to the very small infero-lateral pore like gill openings.

Type No.

U. S. N. M.



4702. D. 5111. Sombrero Island, S.  $41^{\circ}$  E., 4.50 miles (N.  $13^{\circ} 45' 15''$  E.  $120^{\circ} 46' 30''$ ), China Sea. In 236 fathoms. January 16, 1908. Length 290 mm.
10143. D. 5527. Balicasag Island (C.), N.  $14^{\circ}$  W., 8.2 miles (N.  $9^{\circ} 22' 30''$  E.  $123^{\circ} 42' 40''$ ), between Siquijor and Bohol. In 392 fathoms. August 11, 1909. Length 605 mm.
10160. D. 5511. Camp Overton Light, S.  $80^{\circ}$  E., 15.3 miles (N.  $8^{\circ} 16'$  E.  $124^{\circ} 3' 50''$ ), northern Mindanao. In 423 fathoms. August 7, 1909. Length 510 mm.
10171. D. 5513. Camp Overton Light, S.  $67^{\circ}$  E., 10.3 miles (N.  $8^{\circ} 16' 45''$  E.  $124^{\circ} 2' 48''$ ), northern Mindanao and vicinity. In 505 fathoms. August 7, 1909. Length 590 mm.
2185. D. 5329. Font Island (W.), N.  $28^{\circ}$  E., 24.25 miles (N.  $18^{\circ} 33'$  E.  $121^{\circ} 37' 30''$ ), off northern Luzon. In 212 fathoms. November 19, 1908. Length 280 mm., tail atrophied.
- 10548 to 10550. D. 5325. Hermanos Island (N.), N.  $86^{\circ}$  E., 16.75 miles (N.  $18^{\circ} 34' 15''$  E.  $121^{\circ} 51' 15''$ ), off northern Luzon. In 224 fathoms. November 12, 1908. Length 136 to 190 mm.
- 1491, 17821, 17822. D. 5326. Hermanos Island (N), N.  $69^{\circ}$  E., 8 miles (N.  $18^{\circ} 32' 30''$  E.  $122^{\circ} 1'$ ), off northern Luzon. In 230 fathoms. November 12, 1908. Length 147 to 302 mm.

5469. D. 5202. Limasaua Island (E.), S.  $2^{\circ}$  E., 16.70 miles (N.  $10^{\circ} 12'$  E.  $125^{\circ} 4' 10''$ ), Sogod Bay, southern Leyte. In 502 fathoms. April 10, 1908. Length 583 mm.
10296. D. 5624. Makyan Island (S.), N.  $67^{\circ}$  W., 8.9 miles (N.  $0^{\circ} 12' 15''$  E.  $127^{\circ} 29' 30''$ ), between Gillolo and Makyan Islands. In 288 fathoms. November 20, 1909. Length 500 mm.
10242. D. 5648. North Island (S.), N.  $87^{\circ}$  E., 10.2 miles (N.  $5^{\circ} 35'$  E.  $122^{\circ} 20'$ ), Buton Strait. In 559 fathoms. December 16, 1909. Length 635 mm. Type.
10218. D. 5657. Olang Point, N.  $61^{\circ}$  W., 15.5 miles (S.  $3^{\circ} 19' 40''$  E.  $120^{\circ} 36' 30''$ ), Gulf of Boni, Celebes. In 492 fathoms. December 19, 1909. Length 527 mm.

## Family MUROENESOCIDAE

Body greatly elongated, eel like, anteriorly partly cylindrical. Tail long, compressed. Jaws not excessively elongated though conspicuous and conic. Vomer well armed with teeth. Tongue largely adnate. Hind nostril not labial. Gill openings rather wide, narrowly separated below. Branchiostegal membrane connects opposite sides below. Body scaleless. Lateral line present. End of tail surrounded by caudal fin. Pectoral well developed. Vent in front half of body.

Plain colored eels, some of large size, living in rather deep water and resembling the congers. Found in all tropical and subtropical seas.

Analysis of genera

a<sup>1</sup>. Teeth in jaws in several series, one series enlarged and compressed, long canines in front; vomer with series of teeth, median very large canines; tail longer than rest of body. Muroenesox.

a<sup>2</sup>. Teeth in jaws triserial, median series long wide set canines; vomer with very small teeth; tail shorter than rest of body. Oxyconger.

a<sup>3</sup>. Teeth all conic, slender, pointed, in wide bands in jaws, deep edentulous groove on maxillary divides 2 parallel bands; vomer with median series of conic teeth; tail longer than rest of body. Xenomystax.



Genus Muroenesox Mc Clelland

Muroenesox MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 4, 1844,  
p. 408. Type Muroenesox tricuspidata MC CLELLAND = Muraena  
arabica SCHNEIDER, virtually designated by BLEEKER, Atlas Ichth.  
Ind. Neerland, vol. 4, 1864, p. 19.

Muraenesox MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 5, 1845,  
pp. 172, 180, 210. Type Muroenesox tricuspidata MC CLELLAND.

Cynoponticus COSTA, Fauna Napoli, Pesc., 1846, fasc. 52-53, p. 1.

Atypic. Type Cynoponticus ferox COSTA, in index p. 6, monotypic.

Brachyconger BLEEKER, Nederland Tijds. Dierk., vol. 2, 1865, p.

116. Type Conger savanna CUVIER, monotypic.

Congresox GILL, Proc. U. S. Nat. Mus., vol. 13, 1890, p. 234.

Type Conger talabon CUVIER, orthotypic.

Rhechias JORDAN, Proc. U. S. Nat. Mus., vol. 59, 1921, p. 644.

Type Rhechias armiger JORDAN, orthotypic.

Snout moderately produced. Eye large, oval, without free lids. Upper jaw rounded at end, little expanded and somewhat **separated** by subterminal notch from rest of snout. Mouth wide, cleft extends well back behind eye. Teeth in jaws in several series, of first series enlarged and depressed, forming long canines in front. Vomer with several long series of teeth, median row of strong canines. Front nostril with short tube and behind **notch** of upper jaw. Hind nostril opposite middle in depth of eye and about eye **diameter** before it. Gill opening wide. Dorsal and anal well developed, former begins little before or above gill opening.

Large conger like eels, found in most warm seas. Remarkable for the strong armature of teeth on the vomer. Species few.

Larval formLeptocephalus schmidti Weber

Leptocephalus schmidti WEBER, Siboga Exp., vol. 57, Fische,  
1913, p. 74, fig. 23-24. Bay of Bima. -- WEBER and BEAUFORT,  
Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 401, fig.  
200 (head) 201 (type).

Analysis of species

a<sup>1</sup>. Outer mandibular teeth not directed outwards; median canines of vomer with distinct anterior and posterior basal lobes. arabicus.

a<sup>2</sup>. Outer row of mandibular teeth directed or flaring outward; median canines of vomer at most with indication only of basal lobes.

b<sup>1</sup>. Pectoral 3 in head. talabon.

b<sup>2</sup>. Pectoral 4 or more in head. talabonoides.



Muraenesox arabicus (Schneider)

Muraena arabicus SCHNEIDER, Syst. Ichth. Bloch, 1801, p. 488.

Red Sea. (On Muraena cinerea FORSKÅL.)

Muraenesox arabicus FOWLER, Proc. Acad. Nat. Sci. Philadelphia,

1929, p. 592 (Shanghai), p. 601 (Hong Kong); Hong Kong Natural-

ist, vol. 2, No. 4, November 1931, p. 290 (Hong Kong); vol. 3,

No. 1, March 1932, p. 53 (Hong Kong, Shanghai, Natal, India).

Muraenesox arabicus FOWLER, Hong Kong Naturalist, vol. 3, No. 1,

March 1932, (P. 53), fig. 3.

Muraena cinerea FORSKÅL, Descript. Animal., 1775, p. 10. Arabia

(nomen nudum; not BONNATERRE 1788).

Muraena tota cinerea FORSKÅL, Descript. Animal., 1775, p. 22.

Djedda, Re Sea (nombinomial).

Muraena myrus var. tota cinerea GMELIN, Syst. Nat. Linn., ed. 13,

pt. 1, 1789, p. 1134. Red Sea (on FORSKÅL).

Conger cinereus RUPPELL, Atlas Reise Nördl. Afrika, Fische, 1828,

p. 115 (part; not description or figure).

Muraenesox cinereus GUNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 46 (India, Vizagapatam, Calcutta, Malay Peninsula, Philippines, Formosa, Amoy, Japan, Australia, types of Congrus brevicauspis, Congrus angustidens, Congrus protverus). -- KLUNZINGER, Verh. Zool. bot. Ges. Wien, vol. 21, 1871, p. 608 (Red Sea). -- MARTENS, Preuss. Exp. Ost-Asien, vol. 1, 1876, p. 405 (Bangkok, Singapore, Manila). -- CASTELNAU, Proc. Linn. Soc. New South Wales, vol. 2, 1877, p. 244, (Brisbane River). -- NYSTROM, Bihong Kong. Svenske. Vet. Akad. Handl., Stockholm, 1877, p. 46 (Nagasaki). -- DAY, Fishes of India, pt. 4, 1878, p. 602, pl. 168, fig. 4. -- PETERS, Monatsb. Akad. Wiss. Berlin, 1880, p. 926 (Ningpo). -- GUNTHER, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 73 (Kobe). -- KAROLI, Termesz. Füzetek, Budapest, vol. 5, 1881, p. 185 (Sarangoon). -- SAUVAGE, Bull. Soc. Philom, Paris, ser. 7, vol. 5, 1881, p. 107 (Swatow). -- MACLEAY, Proc. Linn. Soc. New South Wales, vol. 8, 1883, p. 278 (Hood Bay, New Guinea). -- DAY, Fauna Brit. India, vol. 1, 1889, p. 91. -- ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 587 (Mindoro, Luzon, Manila Bay, Manang River). -- RUTTER, Proc. Acad. Nat. Sci. Philadelphia, 1897, p. 61 (Swatow). -- ISHIKAWA and MATSUURA, Prelim. Cat. Fishes Mus. Tokyo, 1897, p. 6. -- OGILBY, Handbook of Sydney, 1898, p. 119. --

JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 857  
(Tokyo, Misaki, Tsuruga, Wakanoura, Onomichi, Hiroshima, Nagasaki).  
-- PFEFFER, Ghierw. Ost. Afrika Fische, 1903, p. 41. -- STEAD,  
Fishes of Australia, 1906, p. 44. -- JORDAN and SEALE, Bull. Bur.  
Fishes., vol. 26, 1906 (1907), p. 6 (Manila). -- JORDAN and RICH-  
ARDSON, Bull. Bur. Fishes., vol. 27, 1907 (1908), p. 237 (Manila).  
-- REGAN, Ann. Natal Gov. Mus., 1908, p. 243 (Durban Bay). --  
JORDAN and DICKERSON, Proc. U. S. Nat. Mus., vol. 34, 1908, p.  
604 (Suva). -- SEALE, Philippine Journ. Sci., vol. 5, No. 4, 1910,  
p. 265 (Hong Kong). -- FRANZ, Abh. Bayer. Akad. Wiss., vol. 4,  
Suppl. Band 1, 1910, p. 12 (Yokohama). -- GILCHRIST and THOMPSON,  
Ann. South African Mus., vol. 11, No. 2, 1911, pt. 2, p. 52  
(Natal). -- SNYDER, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 406  
(Kagoshima). -- ZUGMAYER, Abh. Kön. Bayer. Akad. Wiss., Math.-  
phys. Klasse, vol. 26, band 6, 1913, p. 9 (Mekran; Oman). --  
WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3,  
1916, p. 253, fig. 104 (head) (Api Api, Sumatra; Kota Baru and  
Balik Papan, Borneo; Makassar, Celebes; Flores; Aru). -- FOWLER,  
Copeia, No. 58, June 18, 1918, p. 62 (Philippines). -- GILCHRIST  
and THOMPSON, Ann. Durban Mus., vol. 1, pt. 4, May 21, 1917, p.  
302 (compiled).



-- HERRE, Philippine Journ. Sci., vol. 23, No. 2, August 1923, p. 148, pl. 10, fig. 1 (Manila, Alaminos, Aguo River, Bancal River, Calabang, Tacloban, Cavite; Hong Kong; Sandakan). -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1925, p. 196 (Tugela River mouth, Natal, 60 fathoms). -- DERANIYAGALA, Ceylon Administrat. Rep., 1925, p. F15. -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 197 pl. 9, fig. 2 (Natal); pt. 2, Oct. 1927, p. 1018 (Delagoa Bay). -- EVERMANN and SHAW, Proc. Calif. Acad. Sci., ser. 4, vol. 16, No. 4, Jan. 31, 1927, p. 102 (Chefoo). -- MC CULLOCH, Fishes New South Wales, ed. 2, 1927, p. 23, pl. 8, fig. 78z. -- FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 259 (Orani, Orion and Philippines), Mem. Bishop Mus., vol. 10, 1928, p. 37 (compiled); Journ. Bombay Nat. Hist. Soc., vol. 32, No. 2, 1928, p. 255 (Off Bambay); vol. 33, No. 1, Sept. 30, 1928, p. 104 (Bombay Bay). -- WU, Contrib. Biol. Lab. Sci. Soc. China, vol. 5, No. 4, 1929, p. 32, fig. 26 (head) (Amoy). -- CHEN, Bull. Biol. Dep. Sun Yat Sen Univ., vol. 1, No. 1, 1929, p. 7, fig. 2 (dentition) (Macao, Foochow, Diapo, Hoihow, Ningpo, Yuingkhoa, Sama, Limkoa, Pakhoi). -- TIRANT, Service Oceanogr. Pêches Indo Chine, 6<sup>e</sup> Note, 1929, p. 174 (Huê).



Muraenesox cinereus SAUVAGE, Bull. Soc. Philom., Paris, ser. 7, vol. 5, 1881, p. 107 (Swatow).

Muraenesox cinereus GORGOZA, An. Soc. Espan. Hist. Nat. Madrid, vol. 14, 1885, p. 74 (Manila).

Muraenesox cinerea BARTLETT, Sarawak Gazette, vol. 26, No. 368, 1896, p. 180 (Buntal and Moratabas).

Muraena bagio BUCHANAN HAMILTON, Fishes of Ganges, 1822, pp. 24, 364. Ganges estuaries.

Conger bagio CANTOR, Journ. Asiatic Soc. Bengal, vol. 18, pt. 2, 1849, p. 1298 (Malay Peninsula and Islands). -- BLEEKER, Verh. Batav. Genootsch. (Nal. Ichth. Japan), vol. 25, 1853, p. 19; (Nal. Ichth. Bengal), vol. 25, 1853, p. 78; (Nal. Ichth. Japan), vol. 26, 1857, p. 6 (Nagasaki); Act. Soc. Sci. Ind. Neerland, No. 3, vol. 3, 1857-58, p. 6 (Japan). -- MASON, Burmah Nat. Resources, 1860, p. 703 (reference). -- BLEEKER, Atlas Ichth. Ind. Neerland, vol. 4, 1864, p. 24, pl. (26) 170, fig. 2 (Java, Pinang, Singapore, Bintang, Sumatra, Borneo, Celebes, Philippines).

Muraenophis bagi CANTOR, Journ. Asiatic Soc. Bengal, vol. 18, pt. 1, 1849, p. 1301.

Muraenesox bagio KAUP, Archiv Naturg., 1856, p. 70 (compiled); Cat. Apodal Fish Brit. Mus., 1856, 116 (no localities). -- BLEEKER, Nederland Tijds. Dierk., vol. 2, 1865, p. 57 (Amoy). -- KNER, Reise Novara, Fische, 1865, p. 373 (Java). -- CASTELNAU, Proc. Linn. Soc. New South Wales, vol. 3, 1873, p. (355) 395 (Port Jackson).

Ophisurus rostratus QUOY and GAIMARD, Voy. Uranie, Zool., 1824,  
p. 242, pl. 51, fig. 1. Ile Rawak.

Conger longirostris BENNETT, Life of Raffles, 1830, p. 692. Su-  
matra.

Conger oxyrhynchus EYDOUX and SOULEYET, Voy. Bonite, Zool., vol. 1,  
1841, p. 203, pl. 9, fig. 2. Macao, China.

Muraenesox tricuspidata MC CLELLAND, Calcutta Journ. Nat. Hist.,  
vol. 4, 1844, p. 409, pl. 24, fig. 1. Chusan and Ningpo; near  
Calcutta, India.

Muraenesox tricuspidata MC CLELLAND, Calcutta Journ. Nat. Hist.,  
vol. 5, 1845, p. 210 (Bengal and China).

Congrus tricuspidatus RICHARDSON, Voy. Sulphur, Fishes, 1844, p.  
105, pl. 51, fig. 2 (Chusan, Ningpo, Canton); Ichth. Voy. Erebus  
and Terror, 1844-48, p. 110 (China and India); Ichth. China and  
Japan, 1846, p. 312 (Chusan, Ningpo, Canton).

Muraenesox hamiltoniae MC CLELLAND, Calcutta Journ. Nat. Hist., vol.  
5, 1845, p. 182, pl. 8, fig. 3 (on Muraena bagio BUCHANAN HAM-  
ILTON).

Muraenesox hamiltonii MC CLELLAND, Calcutta Journ. Nat. Hist., vol.  
5, 1845, p. 210, pl. 8, fig. 3.

Muraenesox bengalensis MC CLELLAND, Calcutta Journ. Nat. Hist., vol.  
5, 1845, p. 182. Bengal.

Muraenesox aurea MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 5,  
1845, p. 183 (on Taloo paum RUSSELL, Fishes of Coromandel, vol.  
1, 1803, p. 23, Vizagapatam).

Muraeophis bazi MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 5,  
1845, p. 203 (on Muraenesox hamiltoniae MC CLELLAND).

Conger hamo SCHLEGEL, Fauna Japonica, Poiss., pt. 10-14, 1846, p. 262, pl. 114, fig. 2. All bays in south west of Japan; Osaka.  
-- BREVOORT, Narr. Exp. China Jap. Perry, vol. 2, 1856, p. 282 (Simoda).

Congrus hamo RICHARDSON, Ichth. Voy. Erebus and Terror, 1844-48, p. 111 (Philippines).

Congrus protverus RICHARDSON, Ichth. Voy. Erebus and Terror, 1844-48, p. 110. Unknown locality.

Congrus angustidens RICHARDSON, Ichth. Voy. Erebus and Terror, 1844-48, p. 110. China.

Congrus brevisuspis RICHARDSON, Ichth. Voy. Erebus and Terror, 1844-48, p. 111. Habitat unknown. -- KAUP, Cat. Apodal Fish Brit. Mus., 1856, (copied).

Conger singaporensis BLEEKER, Verh. Batav. Genootsch. (Muraen.), vol. 25, 1855, p. 21. Batavia; Singapore.

Muraenesox singapurensis BLEEKER, Atlas Ichth. Ind. Neerland, vol. 4, 1864, p. 25, pl. (7) 151, fig. 2 (Java, Singapore, Celebes). -- KNER, Reise Novara, Fische, 1865, p. 371 (Madras, Java, Hong Kong).

Conger moniliger BLEEKER, Atlas Ichth. Ind. Neerland, vol. 4, 1864, p. 24 (name in synonymy).



Depth  $2 \frac{7}{8}$  to  $3 \frac{1}{2}$  in head,  $14 \frac{3}{5}$  to 20 to caudal base; head  $2 \frac{1}{4}$  to  $2 \frac{1}{2}$  to vent,  $5 \frac{1}{3}$  to 6 to caudal base, width  $4 \frac{2}{3}$  to 5 in head length; combined head and trunk  $1 \frac{1}{4}$  to  $1 \frac{2}{3}$  in rest of length. Snout  $3 \frac{1}{2}$  to 4 in head; eye 8 to 9, 2 to  $2 \frac{4}{5}$  in snout, slightly greater to subequal with interorbital; mouth cleft 2 to  $2 \frac{1}{3}$  in head; upper teeth in 2 series, inner series posteriorly curved inward and forms broad band of 3 or 4 rows, with ~~age~~ third or very low outer series may form; lower teeth triserial, median row greatly larger, and form 2 or 3 large canines at front of jaws; 8 to 10 canines on premaxillary, vomer with median row of 5 to 8 large compressed tricuspid teeth; interorbital 10 to 12 in head, convex. Gill opening  $6 \frac{2}{5}$  to 8.

Dorsal begins little before gill openings, sometimes advanced nearly to last sixth of head, fin height 5 to  $6 \frac{4}{5}$  in head; caudal 3 to  $3 \frac{1}{4}$ ; pectoral  $2 \frac{2}{5}$  to 3.

Gray to gray brown on back, paler or gray white to white below. Iris whitish or yellowish white. Vertical fins brown, with broad dark margins, neutral black on anal. Pectoral brownish, darker terminally.



6205. Batangas. June 7, 1908. Length 378 mm.
6708. Cavite market. December 1, 1908. Length 395 mm.
13000. Iloilo market. March 28, 1908. Length 458 mm.
4653. Manila market. January 13, 1908. Length 467 mm.
- A436. Manila market. March 13, 1908. Length 377 mm.
5696. Manila market. April 27, 1908. Length 493 mm.
18438. Manila market. May 4, 1908. Length 470 mm.
6261. Manila market. June 12, 1908. Length 274 mm.
8300. Sorsogon market. March 12, 1909. Length 548 mm.
6815. Kowloon market. September 19, 1908. Length 583 mm.
5108. Sandakan Bay, Borneo. March 3, 1908. Length 490 mm.

Muraenesox talabon (Cuvier)

Conger talabon CUVIER, Regne Animal, ed. 2, vol. 2, 1829, p. 350

(on Tala bon RUSSELL, Fish of Coromandel, vol. 1, 1803, p. 27, pl. 38, Vizagapatam). -- CANTOR, Journ. Asiatic Soc. Bengal, vol. 18, pt. 2, 1849, p. 1294 (Pinang; Malay Peninsula). -- BLEEKER, Verh. Batav. Genootsch. (Nal. Ichth. Bengal), vol. 25, 1853, p. 78 (reference). -- MASON, Burmah Nat. Resources, 1860, p. 703 (reference).

Muraenesox talabon BLEEKER, Atlas Ichth. Ind. Neerland, vol. 4,

1864, p. 22, pl. (8) 152, fig. 2 (Java, Madura, Sumatra, Nias, Singapore, Borneo, Celebes). -- KNER, Reise Novara, Fische, 1865, p. 372 (locality?). -- SCHMELTZ, Cat. Mus. Godeffroy, No. 4, 1869, p. 26 (Singapore). -- DAY, Fauna Brit. India, vol. 1, 1889, p. 90, fig. 38. -- ELERA, Cat. Fauna Filip., vol. 1, 1895, p. 537 (Luzon, Cavite, Santa Cruz). -- DUNCKER, Mitteil. Nat. Mus., Hamburg, vol. 21, 1903, (1904), p. 187 (Pinang, Singapore, Bandar Maharani). -- JORDAN and SEALE, Proc. Davenport Acad. Sci., vol. 10, 1907, p. 4 (Hong Kong). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 255, fig. 103, text fig. 105 (dentition) (Bagan Api Api, Sumatra; Balik Papan, Borneo). -- VINCIGUERRA, Ann. Mus. Civico Stor. Nat. Genova, ser. 3, vol. 10, 1921-26, p. 605 (Sarawak). -- HERRE, Philippine Journ. Sci., vol. 23, No. 2, August 1923, p. 149 (Manila).

Muraenesox telabon DAY, Fishes of Malabar, 1865, p. 246, Fishes of India, pt. 4, 1878, p. 661, pl. 168, fig. 5 (error).

Muranensox talabon CHEN, Bull. Biol. Dep. Sun Yat Sen Univ., vol. 1, No. 1, 1929, p. 9 (reference; error).

Muroenesox exodon MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 4, 1844, p. 409. Bay of Bengal.

Muraenesox exodentata MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 5, 1845, p. 180, pl. 8, fig. 4 (type).

Muroenesox lanceolata MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 4, 1844, p. 409. Bengal.

Muraenesox lanceolata MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 5, 1845, pp. 181, 210 (compiled).

Muroenesox serradentata MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 4, 1844, p. 409.

Muraenesox serradentata MC CLELLAND, Calcutta Journ. Nat. Hist., vol. 5, 1845, p. 210 (compiled).

Muraenesox pristis KAUP, Archiv Naturg., 1856, p. 74. Asia; Cat. Apodal Fish Brit. Mus., 1856, p. 116 (Indian Ocean).

Muraenesox talabonoides (Bleeker)

Conger talaboindes BLEEKER, Verh. Batav. Genootsch. (Muraen.),  
voo. 25, 1853, p. 20. Batavia, Java.

Muraenesox talaboindes BLEEKER, Atlas Ichth. Ind. Neerland, vol.  
4, 1864, p. 23, pl. (10) 154, fig. 2 (Java). -- GUNTHER, Cat.  
Fishes Brit. Mus., vol. 8, 1870, p. 46 (Java). -- DAY, Fauna  
Brit. India, vol. 1, 1889, p. 91. -- WEBER and BEAUFORT, Fishes  
Indo Austral. Archipelago, vol. 3, 1916, p. 256, fig. 106 (head)  
(Balik Papan, Borneo). -- FOWLER, Mem. Bishop Mus., vol. 10,  
1928, p. 37, (type of Rhechias armiger). -- CHEN, Bull. Biol.  
Dep. Sun Yat Sen Univ., vol. 1, No. 1, 1929, p. 8 fig. 3 (dent-  
ition) (Hoihow).

Muraenesox telaboindes DAY, Fish of India, pt. 4, 1874, p. 662, pl.  
168, fig. 3 (Hooghly at Calcutta).

Muraenesox talaboindes FOWLER, Hong Kong Naturalist, vol. 3, No. 1,  
March 1932, p. 55 (compiled).

Muraena myrus (not LINNAEUS) GRAY, Cat. Fish Gronow, 1854, p. 20  
(part).

Rhechias armiger JORDAN, Proc. U. S. Nat. Mus., vol. 59, 1921, p.  
644, fig. 1. Hawaii. (Young dried example).



Genus Oxyconger Bleeker

Oxyconger BLEEKER, Atlas Ichth. Ind. Neerland., vol. 4, 1864, p.

19. Type Conger leptognathus BLEEKER, orthotypic.

Body compressed, longer than tail. Head moderate. Snout long, slender, pointed. Eye small, slightly advanced. Mouth cleft extends little beyond eye. Teeth triserial in jaws, median as long slender canines, wide set, some straight, some curved. Vomer with series of very small teeth. Nostrils without tubes, posterior little before eye. Gill opening small. Dorsal inserted over gill opening. Pectoral slender, short.

Oxyconger leptognathus (Bleeker)

Conger leptognathus BLEEKER, Act. Soc. Sci. Ind. Neerland, No. 3,  
vol. 3, 1857-58, p. 27, pl. 2, fig. 2. Japan.

Oxyconger leptognathus GUNTHER, Cat. Fishes Brit. Mus., vol. 8,  
1870, p. 49 (type). -- JORDAN and SNYDER, Proc. U. S. Nat. Mus.,  
vol. 23, 1901, p. 858, fig. 9 (head) (Tokyo market).

Genus Xenomystax Gilbert

Xenomystax GILBERT, Proc. U. S. Nat. Mus., vol. 14, 1891, p.

348. Type Xenomystax atrarius GILBERT.

Body long, shorter than long tapering tail. Head rather large. Snout long, slender. Eye rather large, little advanced. Mouth cleft long, reaches beyond eye midway in head. Teeth conic, slender, sharp, mostly de pressible, in broad bands in jaws, upper with edentulous groove on maxillary separating 2 parallel lengthwise bands. Vomer with teeth. Tongue small, adherent. Front nostril large, subtubular slit near snout tip, hind one slit on side of snout nearly medial. Gill opening large, interspace narrow. Branchial openings into pharynx wide slits. No scales. Vertical fins well developed, confluent, dorsal beginning little before gill opening. Pectoral less than snout.

Analysis of species

a<sup>1</sup>. Pectoral 2 in snout; head longer than trunk.

atrarius.

a<sup>2</sup>. Pectoral 1  $\frac{2}{3}$  in snout; head equals trunk.

trucidans.



Xenomystax atrarius Gilbert

Xenomystax atrarius GILBERT, Proc. U. S. Nat. Mus., vol. 14, 1891, p. 348. Albatross Station 2792, 401 fathoms, off Ecuador. -- JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1889, (1892), p. 649 (reference). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 361 (compiled).

Xenomystax trucidans Alcock

Xenomystax trucidans ALCOCK, Journ. Asiatic Soc. Bengal, vol. 63, pt. 2, 1894, p. 134. Laccadive Sea, 719 fathoms; Illustrat. Zool. Investigator, pt. 3, 1895, pl. 16, fig. 5; Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 338 (reference); Cat. Deep Sea Fishes Indian Mus., 1899, p. 205 (Arabian Sea between Laccadives and Malabar Coast, 360 to 719 fathoms).

## Family NEENCHELIDAE

Body elongate, anteriorly partly cylindrical, tail somewhat compressed. Head tapering. Snout conic, somewhat prominent by prominence of ethmoid together with premaxillary plate beyond articulation with maxillaries. Eye small. Mouth cleft small. Teeth acute, few, spaced, uniserial in jaws and on vomer. Tongue not free. Front nostrils in short tube near snout tip. Hind nostrils long narrow slit before eye. Gill openings small or medium, lateral, separated by wide interspace. Branchial openings in pharynx narrow slits. Lateral line present. Dorsal origin well behind gill openings. Dorsal, anal and caudal confluent. Pectorals present. Vent far behind gill openings, premedian.

Small eels of the Indo Pacific.

Genus Neenchelys Bamber

Neenchelys BAMBER, Journ. Linn. Soc. London, Zool., vol. 31,  
1915, p. 479.

Body moderately deep. Snout small. Eye far advanced. Mouth cleft reaches beyond eye. Teeth rather long. Branchiostegals 25, shining through skin of pharynx. Vertical fins low. Color uniform.

Neenchelys buitendijki Weber and Beaufort

Neenchelys buitendijki WEBER and BEAUFORT, Fishes Indo Austral.  
Archipelago, vol. 3, 1916, p. 268, fig. 116, fig. 117 (head).  
Batavia Bay, Java.



## Family SAUROMURAENESOCIDAE

Body deepest premedially, compressed, with high arched back, tail low even at junction with trunk and tapering. Head large. Snout long, attenuate. Eye rather large. Mouth cleft wide. Teeth sharp, uniserial in jaws, some enlarged. Gill openings separate. No scales. Lateral line axial. Vertical fins low or little developed, confluent. Pectoral long.

One genus.

Genus Sauromuraenesox Alcock

Sauromuraenesox ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 4,  
1889, p. 457. Type Sauromuraenesox vorax ALCOCK, monotypic.

Tail nearly long as combined head and trunk, much lower than rest of body. Snout pointed, overhangs mouth and lower jaw. Eye nearly at first fourth in head. Mouth cleft extends beyond eye, with slight notch in profile of upper jaw near tip. Some enlarged teeth on premaxillary and front end of mandible. Row of fangs on vomer. Tongue free. Nostrils lateral. Gill opening large. Gill openings into pharynx wide slits. Heart placed between gills. Lateral line distinct, not conspicuous, each pore at end of small branch. Vertical fins feeble. Pectoral placed about midway in body depth.

*Sauromuraenesox vorax* Alcock

*Sauromuraenesox vorax* ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol.

4, 1889, p. 458. N.  $20^{\circ} 17' 30''$  E.  $88^{\circ} 51'$ , Bay of Bengal, 193 fathoms; Illustrat. Zool. Investigator, pt. 1, 1892, pl. 6, fig. 3; Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 338 (reference); Cat. Deep Sea Fishes Indian Mus., 1899, p. 203 (Bay of Bengal, 193 to 250 fathoms).

Depth  $9 \frac{1}{3}$ ,  $5 \frac{1}{5}$  to vent; head  $2 \frac{1}{3}$ ,  $4 \frac{1}{2}$  in total. Snout  $5 \frac{1}{4}$  in head; eye 10, 2 in snout; mouth cleft  $2 \frac{3}{4}$  in head, extends eye diameter beyond eye; single row of close set, equal, acute, moderate teeth in each jaw, on maxillary very incomplete inner series of similar teeth; 3 pairs of lower front canines, median very large and fit into notch above between premaxillaries and maxillaries when jaw closes; 3 smaller premaxillary canines, project when mouth closes; row of 4 large equal canines on vomer. Gill opening long as combined snout and eye.

Lateral line ends in posterior half of tail.

Dorsal origin little over snout length before gill opening; caudal very small; pectoral  $3 \frac{1}{4}$  in head.

Chocolate above, whitish or silvery below. Vertical fins whitish. Pectoral dark brown, edged gray. Length 355 mm. (Alcock)

Bay of Bengal.

## Family HETEROCONGRIDAE

Body very long, subcylindrical. Tail compressed, nearly twice or more than twice head and trunk. Snout obtuse, very short. Mouth cleft small, oblique, reaches front eye edge. Lower jaw protrudes. Tongue free. Teeth in jaws and on vomer small, acicular, in narrow bands, continuous with premaxillary. Front nostril very small and concealed, hind nostril slit near eye. Gill opening lateral narrow slit. Body scaleless. Lateral line present. Dorsal, anal and caudal confluent. No pectoral. Vent far behind gill opening.

Analysis of genera

<sup>1</sup>  
a . Pectorals absent.

Heteroconger.

a<sup>2</sup>. Pectorals present.

Taenioconger.



Genus Heteroconger Bleeker

Heteroconger BLEEKER, Versl. Meded. Akad. Wet. Amsterdam, vol. 2,  
1868, p. 331. Type Heteroconger polyzona BLEEKER, monotypic.

Body long, subcylindrical. Head small. Snout short. Eye large, well advanced. Mouth oblique, terminally superior. Teeth small, conic, subequal, numerous, in several rows in jaws and on vomer, band on latter narrowing within lower half of body depth. Dorsal begins rather close behind gill opening. No pectoral. Body with numerous dark transverse bands.

Heteroconger polyzona Bleeker

Heteroconger polyzona BLEEKER, Versl. Meded. Akad. Wet. Amsterdam, vol. 2, 1868, p. 332, pl. Amboyna. -- GUNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 44 (type). -- WEBER and BEAUFORT, Fishes Indo Austral. Archipelago, vol. 3, 1916, p. 272 (type).

Genus Taenioconger Herre

Taenioconger HERRE, Philippine Journ. Sci., vol. 23, No. 2, August 1923, p. 152. Type Taenioconger chapmani HERRE, monotypic.

Body greatly elongate, slender, subcylindrical, tail greatly compressed. Head small short. Snout short, blunt, obtuse. Eye large, well advanced. Mouth superiorly terminal, oblique. Teeth very small, pointed, subequal, close set, in bands in jaws and on vomer. Hind nostrils in front of eyes, about level with their upper edge. Gill opening nearer back than belly, greater than pectorals. Dorsal begins close behind gill openings, confluent with other vertical fins around end of long tail. Pectoral minute, close behind gill opening. Coloration uniform.

Taenioconger chapmani Herre

Taenioconger chapmani HERRE, Philippine Journ. Sci., vol. 23,

No. 2, 1923, p. 152, pl. 3. Dumaguete, Oriental Negros.

Family XENOCONGRIDAE

Body elongated. Snout short. Eye advanced. Branchial clefts with small pharyngeal apertures. Frontals paired; palato-pterygoids formed as elongate laminae; caudal vertebrae without lateral processes. No scales. Dorsal and anal confluent with caudal. No pectorals.

Differs from the Muraenidae in the small pharyngeal apertures of the branchial clefts, also absence of scales and pectoral fins.

Analysis of genera

- a<sup>1</sup>. Upper teeth biserial, lower quadriserial; tail twice length  
of rest of fish. Xenconger.
- a<sup>2</sup>. Upper and lower teeth uniserial; tail slightly longer than  
rest of fish. Endeconger.

Genus Xenocoonger Regan

Xenocoonger REGAN, Trans. Linn. Soc. London, vol. 15, Sept. 1912,  
p. 301. Type Xenocoonger fryeri REGAN, monotypic.

Body elongate. Snout broad, flat. Eye small. Mouth terminal, moderately wide. Maxillary ends just behind eye, not reaching mouth angle. Teeth pointed, conic or slightly compressed, biserial on maxillary, form broad bands in lower jaw. Vomer with rounded patch of teeth continued backwards as pair of curved bands, each of smaller outer and larger inner series. Tongue not free. Nostrils lateral, anterior with short tube. No scales. Dorsal and anal well developed, confluent with reduced caudal. No paired fins.

One species. Said to be nearest *Nettastoma* but differing widely in its short snout and restricted inner branchial apertures.



Xenoconger fryeri Regan

Xenoconger fryeri REGAN, Trans. Linn. Soc. London, vol. 15, Sept.

1912, p. 301. Assumption Island, Indian Ocean. -- NORMAN, Ann.

Mag. Nat. Hist., ser. 9, vol. 10, August 1922, p. 218, fig. a

(dentition).

Tail nearly twice long as rest of fish; head  $2\frac{1}{2}$  to vent, wide as deep, depth less than  $\frac{1}{3}$  its length. Snout rounded anteriorly, slightly broader than long, length nearly 4 in head, 3 times eye; jaws equal; mouth cleft horizontal, extends eye diameter behind eye; front nostril near snout tip, hind one before lower part of eye.

Dorsal origin  $\frac{3}{4}$  head length behind head.

Brownish, spotted or marbled with blackish. Length 400 mm. (Regan.)

Assumption Island.

Genus Endeconger Jordan

Endeconger JORDAN, (Classification of Fishes) Stanford Univ. Pub., Biol. Sci., vol. 3, No. 2, 1923, p. 131. Type Brachyconger platyrhynchus NORMAN, virtually as Endeconger JORDAN proposed to replace Brachyconger NORMAN (Misquoted "Brachyconger REGAN 1922").

Brachyconger (not ) NORMAN, Ann. Mag. Nat. Hist., ser. 9, vol. 10, August 1922, p. 217. Type Brachyconger platyrhynchus NORMAN, monotypic.

Tail short. Teeth in jaws, except at front of upper, uniserial.  
Hind nostril labial.

Endeconger platyrhynchus (Norman)

Brachyconger platyrhynchus NORMAN, Ann. Mag. Nat. Hist., ser. 9,  
vol. 10, August 1922, p. 218, fig. b (teeth). New Britian. --  
FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 39 (copied).

Endeconger platyrhynchus FOWLER, Mem. Bishop Mus., vol. 11, No. 5,  
1931, p. 316 (reference).

Tail slightly longer than rest of fish; head  $2 \frac{2}{5}$  to vent, little broader than deep. Snout nearly 6 in head, slightly more than eye diameter, broad, flat, rounded anteriorly; jaws equal, mouth cleft horizontal, reach below hind eye border; teeth in jaws and on vomer uniserial except 2 or 3 irregular series at front of upper jaw; front nostril almost at snout end, hind one just before vertical of front eye edge.

Dorsal and anal well developed, former begins at space from gill opening  $\frac{2}{7}$  of head length.

Brownish, paler below. Caudal with very narrow pale margin. Length 130 mm. (Norman.)

New Britian.

## Family NETTASTOMIDAE

Body elongate, more or less compressed. Tail ends in slender tip or filament. Snout elongate, pointed, upper jaw longer. Bands of cardiform recurved teeth in jaws and on vomer, last not separated from premaxillary. Tongue not free. Nostrils superior or lateral, anterior tubular and not far from snout tip, slit like posterior above or just before eye. Gill opening small or moderate, partly inferior and separate. Gill slits within pharynx wide. Lateral line present. Vent far behind gill opening, premedian. Dorsal, anal and caudal confluent. No pectoral.

Bathypelagic eels with fragile bodies of tropical and warm seas. As some species change with age Facciola<sup>1</sup> has proposed *Nettastomella*<sup>1</sup> as a group name for chiefly Mediterranean forms.

---

<sup>1</sup>

Bull. Soc. Zool. Ital. Roma, ser. 3, vol. 3, fasc. 1-14, 1914, p. 47.

---



Analysis of genera

a<sup>1</sup>. Nettastominae. Nostrils superior, posterior above and before eye, anterior at tip of bony portion of snout.

b<sup>1</sup>. Snout not ending in fleshy proboscis; front nostrils near snout tip.

c<sup>1</sup>. Hind nostril before eye on level with its upper front edge.

Nettastoma.

c<sup>2</sup>. Hind nostrils begin above middle of eye in interorbital and extend backward, converging toward middle line.

Metopomycter.

b<sup>2</sup>. Snout with long slender fleshy tip or proboscis, at base of which front nostrils.

Venefica.

a<sup>2</sup>. Chlopsinae. Nostrils lateral, posterior slit like and placed just in front of eye; snout without fleshy tip.

Chlopsis.

Genus Nettastoma Rafinesque

Nettastoma RAFINESQUE, Carr. Nuov. Piant. Animal. Sicil., 1810, p.

66. Type Nettastoma melanura RAFINESQUE, monotypic.

Hyoprurus KOLLOKER, Verh. Phys. Med. Gessell. Würzburg, vol. 4,

1883, p. 101. Type Hyoprurus messinensis KOLLOKER, monotypic.

(Larva.)

Snout much produced, depressed, without fleshy proboscis. Median vomerine teeth somewhat larger than others. Nostrils nearly superior, anterior at bony portion of snout tip, posterior above and before eye. Gill openings moderate. No phyloric appendages. Air vessel present. Head with numerous mucus pores. Dorsal low, begins nearly over gill opening.

Nettastoma melanura Rafinesque

Nettastoma melanura RAFINESQUE, Carr. Nuov. Plant. Animal. Sicil., 1810, p. 66, pl. 16, fig. 1. Sicily. -- DESMAREST, Nuov. Dict. Hist. Nat., vol. 22, 1818, p. 585 (reference). -- SWAINSON, Nat. Hist. Animals, vol. 2, 1839, p. 335 (reference). -- BONA-PARTE, Cat. Metod. Pesc. Europ., 1846, p. 39 (Mediterranean). -- KAUP, Archiv Naturg., 1856, pt. 1, p. 75 (compiled); Cat. Apodal Fish Brit. Mus., 1856, p. 119, pl. 15, fig. 75 (head) (compiled). -- ROULE, Res. Camp. Sci. Monaco, vol. 52, 1919, p. 96 (6 miles off Sao Miguel, 950 meters; 3 miles off Fayal, 950 meters).

Nettastoma melanurum GUNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 48 (Nice); Rep. Voy. Challenger, vol. 22, 1887, p. 253 (reference). -- VAILLANT, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 83, pl. 5, figs. 2, a-b (coast of Soudan, 640 meters; Cape Verde Islands, 90 to 760 meters). -- JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1888 (1892), p. 651 (compiled). -- GOODE and BEAN, Oceanic Ichth., 1895, pp. 149, 517 (compiled).

Muraenophis saga RISSO, Ichth. Nice, 1810, p. 370, pl. 10, fig. 39. Nice.

Hyoprurus messinensis KOLLER, Verh. Phys. Med. Gesell. Wurzburg, vol. 4, 1854, p. 101. Messina. (Larva.) -- VAILLANT, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 95 (coasts of Morocco, 550 meters).

Nettastoma brevirostre FACCIOLA, Natural. Sicilia, vol. 6, 1887, p. 116, pl. 3, fig. 3.

Genus Metopomycter Gilbert

Metopomycter GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903  
(1905), p. 585. Type Metopomycter denticulatus GILBERT, mono-  
typic.

Body slender, with tapering moderately long tail. Head rather large. Muzzle long, depressed. Eye moderate, little advanced. Mouth cleft long, reaches hind eye edge. Teeth very small. No tongue. Front nostril superior near snout end, large round opening directed forward, in very short tube; hind nostril long slit beginning above middle of eye in interorbital space and pair converging backward. Gill opening rather small. Lateral line axial. Dorsal begins little before gill opening, rather high, confluent with moderate caudal and lower anal. No pectoral.

Analysis of species

a<sup>1</sup>. Head  $2 \frac{4}{5}$  to vent; hind eye edge well before middle of head.

denticulatus.

a<sup>2</sup>. Head  $3 \frac{1}{2}$  to vent; hind eye edge midway in head. parviceps.



Metopomycter denticulatus Gilbert

Metopomycter denticulatus GILBERT, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 585, fig. 233. Near Kauai, 409 to 550 fathoms. -- FOWLER, Mem. Bishop Mus., vol. 10, 1928, p. 40 (type).

Metopomycter parviceps (Günther)

Nettastoma parviceps GÜNTHER, Ann. Mag. Nat. Hist., ser. 4, vol. 20, 1877, p. 446. South of Yedo, Japan; Rep. Voy. Challenger, vol. 22, 1887, p. 253, pl. 63, fig. A (type). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 148 (reference). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 194 (off East London and eastern declivity Agulhas Bank, 33 to 400 fathoms).

Genus Venefica Jordan and Davis

Venefica JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1888

(1891), p. 651. Type Venefica procerum GOODE and BEAN, orthotypic.

Body very elongate, compressed. Head moderate, conic, somewhat depressed. Snout prolonged into slender fleshy flap. Eyes covered by skin. Bands of cardiform teeth in jaws and on vomer. No lips. Tongue not free. Front nostrils in tubes near top of snout, behind base of flap. Hind nostrils at upper part of front eye edge. Gill openings small, partly inferior, separated by rather wide interspace. Pores in course of sensory canals of head well developed. Lateral line well developed, with numerous pores uniserial. Dorsal origin above or somewhat before gill opening. Vertical fins confluent. No pectoral. Vent far back, premedian.

Bathypelagic in tropical or warm seas.

Analysis of species

a<sup>1</sup>. Proboscis  $2 \frac{2}{3}$  in snout; eye  $6 \frac{1}{4}$  in firm portion of snout.

procera.

a<sup>2</sup>. Proboscis  $1 \frac{2}{5}$  in snout; eye 9 in firm portion of snout.

ocella.

a<sup>3</sup>. Proboscis  $1 \frac{1}{2}$  in snout; eye  $7 \frac{2}{3}$  in firm portion of snout.

proboscidea.

a<sup>4</sup>. Proboscis 2 in snout; eye 7 in firm portion of snout.

tentaculata.

Venefica procera (Goode and Bean)

Nettastoma procerum GOODE and BEAN, Bull. Mus. Comp. Zool., vol.

10, 1882, p. 224. N.  $33^{\circ} 35'$  to  $34^{\circ}$  W.  $76^{\circ}$ , 178 to 647 fathoms.

Gulf Stream off North Carolina. -- GÜNTHER, Rep. Voy. Challenger, vol. 22, 1887, p. 253 (compiled).

Venefica procera JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16,

1888 (1891), p. 651 (compiled). -- GOODE and BEAN, Oceanic Ichth.,

1895, p. 149, pl. 44, fig. 168 (types; Station 327). -- JORDAN

and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 365

(copied; off San Pedro, California). -- WEBER, Siboga Exp., vol.

57, Fische, 1913, p. 45, pl. 5, fig. 4 (N.  $00^{\circ} 34' 6''$  E.  $119^{\circ} 39'$

8, 1301 meters, Celebes Sea). -- WEBER and BEAUFORT, Fishes Indo

Austral. Archipelago, vol. 3, 1916, p. 271, fig. 118-119 (Celebes specimen).



Depth 7 in head; head  $3 \frac{1}{8}$  to vent, width  $7 \frac{3}{4}$  in its length; combined head and trunk equals broken tail. Snout  $1 \frac{7}{8}$  in head; proboscis to mandible end  $2 \frac{1}{2}$  in snout; eye 10 in head from firm end of snout, 6 in snout, greatly exceeds narrow interorbital; maxillary reaches opposite hind eye edge, length from firm snout end  $1 \frac{4}{5}$  in head; teeth in villiform bands in jaws; interorbital 2 in eye, slightly convex. Gill opening about long as eye, much greater than interspace.

Lateral line distinct.

Dorsal origin little before gill opening, fin height 6 in head; anal lower, fin height  $8 \frac{3}{4}$ .

Brown. Iris grayish.

Gulf Stream, off California, Celebes Sea, Philippines. The above account from my largest example, though minus end of tail.

D. 5187. Apo Island, S.  $21^{\circ}$  W., 12.50 miles (N.  $9^{\circ} 16' 45''$  E.  $123^{\circ} 2'; 5''$ ), Tanon Strait, east coast of Negros. In 225 fathoms.

March 31, 1908. Length 91 mm., poor, tail end damaged.

D. 5269. Matocot Point, S.,  $54^{\circ}$  E., 3 miles (N.  $13^{\circ} 39' 50''$  E.  $126^{\circ} 59' 30''$ ), Verde Island Passage and Batangas Bay. In 220 fathoms.

June 8, 1909. Length 128 to 157 mm. 2 examples, poor.

D. 5349. Point Tabonan, N.  $85^{\circ}$  E., 45.2 miles (N.  $10^{\circ} 54'$  E.  $118^{\circ} 26' 20''$ ), Palawan Passage. In 730 fathoms. December 27, 1908.

Length 315 mm. to end of broken tail.

Venefica ocella Garman

Venefica ocella GARMAN, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 318, pl. 61, fig. 2. N.  $5^{\circ} 30'$  W.  $86^{\circ} 45'$ , 1067 fathoms.

Venefica proboscidea (Vaillant)

Nettastoma proboscidea VAILLANT, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 84, pl. 7, fig. 3. Off Morocco, 2200 meters.

Venefica proboscidea JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1888 (1892), p. 652 (compiled). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 150 (compiled). -- BARNARD, Ann. South African Mus., vol. 21, pt. 1, 1925, p. 194 (off Cape Point, 660 fathoms).

Venefica tentaculata Garman

Venefica tentaculata GARMAN, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 319, pl. M., fig. 2. N.  $5^{\circ}$  to  $16^{\circ}$  W.  $86^{\circ}$  to  $99^{\circ}$ , 660 to 978 fathoms. Gulf of Panama.

Genus Chlopsis Rafinesque

Chlopsis RAFINESQUE, Ind. Itt. Sicil., 1810, pp. 42, 58. Type

Chlopsis bicolor RAFINESQUE, monotypic.

Saurenehelys PETERS, Monatsb. Akad. Wiss. Berlin, 1864, p. 397.

Type Saurenehelys cancrivora PETERS.

Gavialiceps WOOD, MASON, and ALCOCK, Ann. Mag. Nat. Hist., ser.

6, vol. 4, 1889, p. 460. Type Gavialiceps taeniloa WOOD, MASON,

and ALCOCK, designated by JORDAN, Genera of Fishes, pt. 4, 1920,

p. 444.

Body long, slender, fragile, compressed, with long tapering tail. Head long, tapering. Snout elongate, conic. Eye small, little advanced. Mouth cleft long, with slender mandible little shorter than snout. Teeth small, sharp, in bands in jaws and on vomer. Tongue short, tip free. Nostrils lateral, posterior slit like and before eye. Gill openings moderate, close together. Lateral line axial. Vertical fins confluent, dorsal beginning above gill opening. No pectoral.



Analysis of species

a<sup>1</sup>. Head shorter than trunk.

b<sup>1</sup>. Head  $2 \frac{2}{3}$  to  $2 \frac{3}{4}$  to vent.

c<sup>1</sup>. Head  $2 \frac{3}{4}$  to vent; eye 5 in snout; vertical fins dark.

taeniola.

c<sup>2</sup>. Head  $2 \frac{2}{3}$  to vent; eye  $3 \frac{1}{2}$  to snout; vertical fins

transparent.

equatorialis.

b2. Head  $2 \frac{1}{5}$  to  $2 \frac{1}{3}$  to vent.

d<sup>1</sup>. Eye 2 in snout.

e<sup>1</sup>. Vertical fins with black edge posteriorly.

bicolor.

e<sup>2</sup>. Coloration pale.

petersi.

d<sup>2</sup>. Eye  $3 \frac{3}{4}$  in snout; tip of caudal black. fierasfer.

d<sup>3</sup>. Eye 4 in snout; color pale.

gilberti.

a<sup>2</sup>. Head little longer than trunk, 5 to  $5 \frac{1}{5}$  in total; eye  $3 \frac{1}{3}$  in snout; grayish, head, thorax and abdomen black.

hasta.

Chlopsis taeniola (Wood, Mason, and Alcock)

Gavialiceps taeniola WOOD, MASON, and ALCOCK, Ann. Mag. Nat. Hist.

ser. 6, vol. 4, 1889, p. 460. N.  $19^{\circ}35'$  E.  $92^{\circ}24'$ , 272 fathoms,  
Bay of Bengal; Andaman Sea 7 miles S. E. by S. of Ross Island,  
265 fathoms. -- GOODE and BEAN, Oceanic Ichth., 1895, p. 517  
(note).

Nettastoma taeniola ALCOCK, Ann. Mag. Nat. Hist., ser. 6, vol. 8,

1891, p. 135 (Stations 120, 240 to 276 fathoms); ser. 6, vol. 10,  
1892, p. 364 (note); Journ. Asiatic Soc. Bengal, vol. 35, pt. 2,  
1896, p. 338 (compiled).

Saurenehelys taeniola ALCOCK, Cat. Deep Sea Fishes Indian Mus., 1899,

p. 206 (Andaman Sea and Bay of Bengal, 240 to 281 fathoms); Ill-  
ustrat. Zool. Investigator, pt. 7, 1900, pl. 34, fig. 2.

Depth  $34 \frac{1}{3}$  to 37 to caudal base,  $3 \frac{2}{3}$  to  $5 \frac{1}{4}$  in head; head  $8 \frac{1}{2}$  to 9 to caudal base,  $2 \frac{3}{4}$  to  $3 \frac{1}{3}$  to vent; combined head and trunk  $1 \frac{3}{4}$  to 2 in tail to caudal base; head width 7 to 8 in its length. Snout  $2 \frac{1}{2}$  to  $3 \frac{1}{3}$  in head; eye 11 to 12,  $3 \frac{3}{4}$  to  $5 \frac{3}{4}$  in snout, little greater than interorbital in young to  $1 \frac{1}{4}$  in interorbital with age; mouth cleft reaches  $\frac{1}{2}$  to  $\frac{3}{4}$  an eye diameter beyond eye, length 2 to  $2 \frac{2}{3}$  in head; teeth slender, sharp, conic, in bands in jaws, each with median enlarged series above, and similar inner enlarged series below; premaxillary teeth external on lower surface of protruded snout, set off from maxillary teeth and before closed mandible tip; single row of 8 to 10 large wide spaced teeth down shaft of vomer; interorbital low, depressed, width  $14 \frac{1}{2}$  to  $15 \frac{1}{2}$ . Gill opening equals eye, interspace barely  $\frac{1}{4}$ .

Lateral line distinct.

Dorsal begins over gill opening, fin height  $4 \frac{1}{2}$  in head; anal lower, fin height  $5 \frac{1}{2}$ ; caudal 3 to 4.

Dark brown, nearly uniform. Young examples often pale. Iris gray. Inside gill opening blackish. Vertical fins often dusky to blackish brown.

Andaman Sea, Bay of Bengal, East Indies, Philippines.

D. 5387. Bagatao Island Light (outer), S.  $80^{\circ}$  E., 27 miles (N.  $12^{\circ}54'40''$  E.  $123^{\circ}20'30''$ ), between Burias and Luzon. In 209 fathoms. March 11, 1909. Length 170 mm.

10176, 10177. D. 5527. Balicasag Island (C.), N.  $14^{\circ}$  W., 8.2 miles (N.  $9^{\circ}22'30''$  E.  $123^{\circ}42'40''$ ), between Siquijor and Bohol. In 392 fathoms. August 11, 1909. Length 517 to 638 mm.

4122. D. 5365. Cape Santiago Light, N.  $73^{\circ}$  W., 6.7 miles (N.  $13^{\circ}44'24''$  E.  $120^{\circ}45'30''$ ), Balayan Bay, Luzon. In 214 fathoms. February 22, 1909. Length 326 mm.

4334. D. 5567. Dammi Island (N.), N.  $81^{\circ}$  W., 9 miles (N.  $5^{\circ}48'33'45''$  E.  $120^{\circ}$ ), north of Tawi Tawi. In 268 fathoms. September 21, 1909. Length 365 mm.

4142. D. 5620. Makyan Island (S.), Molucca Passage. In 358 fathoms. November 28, 1909. Length 588 mm.

D. 5280. Malavatuan Island (N.), S.  $60^{\circ}$  W., 6.10 miles (N.  $13^{\circ}55'20''$  E.  $120^{\circ}25'55''$ ), China Sea vicinity southern Luzon. In 193 fathoms. July 17, 1908. Length 220 mm.

D. 5268. Matocot Point, S.,  $50^{\circ}$  E., 5.80 miles (N.  $13^{\circ}42'57'15''$  E.  $120^{\circ}$ ), off eastern Mindoro. In 170 fathoms. June 8, 1908. Length 170 to 190 mm. 3 examples.

6602. D. 5289. Matocot Point, S.  $42^{\circ}$  E., 5 miles (N.  $13^{\circ}41'50''$  E.  $120^{\circ}58'30''$ ), China Sea vicinity southern Luzon. In 172 fathoms. July 22, 1908. Length 188? to 720 mm. 4 examples.



D. 5267. Matocot Point, S.,  $39^{\circ}$  E. 5.50 miles (N.  $13^{\circ}42'20''$  E.  $120^{\circ}58'25''$ ), off eastern Mindoro. In 170 fathoms. June 8, 1908. Length 185 mm.

D. 5297. Matocot Point, S.  $50^{\circ}$  E., 5.10 miles (N.  $13^{\circ}41'20''$  E.  $120^{\circ}58'$ ), China Sea vicinity southern Luzon. In 198 fathoms. July 24, 1908. Length 218 mm.

2583. D. 5395. Panalangan Point, Talajit Island., S.  $81^{\circ}$  E., 2.9 miles (N.  $11^{\circ}56'40''$  E.  $124^{\circ}14'$ ), between Samar and Masbate. In 140 fathoms. March 15, 1909. Length 296 mm.

8381. D. 5405. Ponson Island (N.), S.  $86^{\circ}$  E., 8.5 miles (N.  $10^{\circ}49'20''$  E.  $124^{\circ}24'23''$ ), Dupon Bay, Leyte and vicinity. In 262 fathoms. March 17, 1909. Length 617 mm.

3373, 8382. D. 5406. Ponson Island (N.), S.  $88^{\circ}$  E., 10.2 miles (N.  $10^{\circ}49'3''$  E.  $124^{\circ}22'30''$ ), Dupon Bay, Leyte and vicinity. In 298 fathoms. March 17, 1909. Length 730 to 775 mm.

4703. D. 5111. Sombrero Island, S.  $41^{\circ}$  E., 4.50 miles (N.  $13^{\circ}45'15''$  E.  $120^{\circ}46'30''$ ), China Sea off southern Luzon. In 236 fathoms. January 16, 1908. Length 494 mm.

D. 5116. Sombrero Island, N.  $69^{\circ}$  E., 2.50 miles (N.  $13^{\circ}41'$  E.  $120^{\circ}47'5''$ ), Balayan Bay and Verde Island Passage. In 200 fathoms. January 20, 1908. Length 290 mm.

Chlopsis equatorialis Gilbert

Chlopsis equatorialis GILBERT, Proc. U. S. Nat. Mus., vol. 14, 1891, p. 347. S. 1 W. 81, 401 fathoms, off Ecuador. -- JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1888 (1892), p. 651 (copied). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 150 (reference). -- JORDAN and EVERMANN, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 364 (copied).

Chlopsis bicolor Rafinesque

Chlopsis bicolor RAFINESQUE, Ind. Itt. Sicil., 1810, pp. 42, 59, pl. 2, fig. 1. Sicily. -- JORDAN and DAVIS, Rep. U. S. Fish Comm., pt. 16, 1888 (1892), p. 650 (note). -- GOODE and BEAN, Oceanic Ichth., 1895, p. 150 (remarks).

Sa urenchelys cancrivora PETERS, Monatsb. Akad. Wiss. Berlin, 1864, p. 397. Mediterranean. -- GUNTHER, Cat. Fishes Brit. Mus., vol. 8, 1870, p. 48 (compiled).

Chlopsis petersi (Day)

Saurenchelys petersi DAY, Fishes of India, pt. 4, 1878, p. 663, pl. 168, fig. 6 Orissa; Fauna Brit. India, Fishes, vol. 1, 1889, p. 92, fig. 39 (copied).

Chlopsis fierasfer Jordan and Snyder

Chlopsis fierasfer JORDAN and SNYDER, Proc. U. S. Nat. Mus., vol. 23, 1901, p. 860, fig. 10. Wakanoura, Japan.

Chlopsis gilberti Garman

Chlopsis gilberti GARMAN, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 316, pl. 52, fig. 2. N.  $7^{\circ}21'$  W.  $79^{\circ}35'$ , 511 fathoms, off Panama.

Chlopsis hasta (Zugmayer)

Gavialiceps hasta ZUGMAYER, Bull. Inst. Oceanogr. Monaco, No. 193, Jan. 20, 1911, p. 7. N.  $36^{\circ}14'$  W.  $8^{\circ}$ , 1400 meters, off Portugal; Res. Camp. Sci. Monaco, vol. 35, 1911, p. 86 (type).